

EXHIBIT 40

Sonal Singh, M.D., M.P.H.

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IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF NEW JERSEY

-----x
IN RE: JOHNSON & JOHNSON TALCUM
POWDER PRODUCTS MARKETING, SALES
PRACTICES, AND PRODUCTS MDL NO:
LIABILITY LITIGATION 16-2738 (FLW)(LHG)

-----x
THIS DOCUMENT RELATES TO
ALL CASES

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VIDEOTAPED DEPOSITION UNDER ORAL EXAMINATION OF
SONAL SINGH, M.D., M.P.H.
January 16, 2019, 9:07 a.m.

REPORTED BY: JANET M. SAMBATARO, RMR, CRR, CLR

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1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25	<p>Deposition of SONAL SINGH, M.D., M.P.H., held at the Beechwood Hotel, 363 Plantation Street, Worcester, Massachusetts, pursuant to Agreement before Janet Sambataro, a Registered Merit Reporter, Certified Realtime Reporter, Certified LiveNote Reporter, and a Notary Public within and for the Commonwealth of Massachusetts, on January 16, 2019, commencing at 9:07 a.m.</p>	<p>1 APPEARANCES: (Continued) 2 3 TUCKER ELLIS 4 BY: MICHAEL C. ZELLERS, ESQ. 5 515 South Flower Street 6 Los Angeles, California 90071 7 (213) 430-3400 8 michael.zellers@tuckerellis.com 9 Representing the Defendant, Johnson & Johnson, Johnson & Johnson Consumer Companies, Inc. 10 11 12 13 14 DRINKER BIDDLE AND REATH, LLP 15 BY: KATHERINE MCBETH, ESQ. 16 One Logan Square, Suite 2000 17 Philadelphia, Pennsylvania 19103-6996 18 (215) 988-2700 19 katherine.mcbeth@dbr.com 20 Representing the Defendant, Johnson & Johnson, Johnson & Johnson Consumer Companies, Inc. 21 22 23 24 - Continued - 25</p>
10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25	Page 3	Page 5
1 APPEARANCES: 2 3 ASHCRAFT & GEREL, LLP 4 BY: MICHELLE A. PARFITT, ESQ. 5 4900 Seminary Road 6 Alexandria, Virginia 22311 7 (703) 931-5500 8 mparfitt@ashcraftlaw.com 9 Representing the Plaintiffs 10 11 LEVIN PAPANTONIO 12 BY: CHRISTOPHER V. TISI, ESQ. 13 316 South Baylen Street 14 Pensacola, Florida 32502 15 (850) 435-7000 16 ctisi@levinlaw.com 17 Representing the Plaintiffs 18 19 RESTAINO LAW LLC 20 BY: JOHN RESTAINO, ESQ. 21 130 Forest Street 22 Denver, Colorado 80220 23 (303) 839-8000 24 JRestaino@RestainoLLC.com 25 Representing the Plaintiffs	1 APPEARANCES: (Continued) 2 GORDON & REES 3 BY: MICHAEL R. KLATT, ESQUIRE 4 816 Congress Avenue, Suite 1510 5 Austin, Texas 78701 6 (512) 391-0197 7 Representing the Defendants, Imerys Talc America, Inc. 8 9 10 COUGHLIN DUFFY LLP 11 BY: MARYAM M. MESEHA, ESQ. 12 350 Mount Kemble Avenue 13 Morristown, New Jersey 07962 14 (973) 267-0058 15 mmeseha@coughlinduffy.com 16 Representing Imerys Talc America, Inc. 17 18 TUCKER ELLIS 19 BY: JAMES W. MIZGALA, ESQ. 20 233 South Wacker Drive 21 Chicago, Illinois 60606 22 (312) 624-6300 23 james.mizgala@tuckerellis.com 24 Representing PTI 25	

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2			2 Number Description Page		
3 SEYFARTH SHAW LLP			3 Exhibit 11 Letter dated June 1, 2015 21		
4 BY: THOMAS T. LOCKE, ESQ.			4 Exhibit 12 Email string with top e-mail		
5 975 F Street, N.W.			5 dated December 27, 2018 23		
6 Washington, D.C. 20004			6 Exhibit 13 Invoices from Dr. Singh 25		
7 (202) 463-2400			7 Exhibit 14 Plaintiffs' Steering Committee's		
8 Representing PCPC			8 Response and Objections to the		
9			9 Notice of Oral and Videotaped		
10 ALSO PRESENT:			10 Deposition of Sonal Singh and		
11 Jody Urbati, Videographer			11 Duces Tecum 28		
12			12 Exhibit 15 Article entitled "Ovarian,		
13			13 Fallopian Tube, and Primary		
14			14 Peritoneal Cancer Prevention		
15			15 (PDQ) - Health Professional		
16			16 Version 89		
17			17 Exhibit 16 Document entitled "Health Canada		
18			18 Decision-Making Framework for		
19			19 Identifying, Assessing, and		
20			20 Managing Health Risks -		
21			21 August 1, 2000" 101		
22			22 Exhibit 17 Document entitled "Systematic		
23			23 Review and Meta-Analysis of the		
24			24 Association between Perineal Use		
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5 By Mr. Klatt 301			5 Cancer" 109		
6 By Mr. Locke 337			6 Exhibit 18 Printout entitled "Ovarian		
7 E X H I B I T S			7 Cancer: Risk Factors" 120		
8 Number Description Page			8 Exhibit 19 Letter dated April 1, 2014 129		
9 Exhibit 1 Notice of Oral and			9 Exhibit 20 IARC Classifications 133		
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12 Exhibit 2 Rule 26 Expert Report of			12 Exhibit 22 Article entitled "Genital use of		
13 Sonal Singh, MD, MPH 14			13 talc and risk of ovarian cancer:		
14 Exhibit 3 Sonal Singh, MD, MPH, FACP,			14 a meta-analysis" 157		
15 curriculum vitae 16			15 Exhibit 23 Article entitled "Perineal Talc		
16 Exhibit 4 List of references 17			16 Use and Ovarian Cancer, A Systematic		
17 Exhibit 5 Additional Materials and			17 Review and Meta-Analysis" 172		
18 Data Considered 17			18 Exhibit 24 Article entitled "The Association		
19 Exhibit 6 Updated Materials List 18			19 Between Talc Use and Ovarian Cancer,		
20 Exhibit 7 List of Trial Testimony 18			20 A Retrospective Case-Control Study		
21 Exhibit 8 List of Expert Deposition 19			21 in Two US States" 179		
22 Exhibit 9 Table 1 AMSTAR 20			22 Exhibit 25 Article entitled "Tubal Ligation		
23 Exhibit 10 Rule 26 Expert Report of			23 Induces Quiescence in the Epithelia		
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25 attachments 21			25 - Continued -		

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4	into the Pathogenesis of Ovarian	
5	Cancer: Oxidative Stress" 228	
6	Exhibit 27 Federal Register, Vol. 81,	
7	No. 243 233	
8	Exhibit 28 Document entitled "Interpretation	
9	of Epidemiologic Studies on Talc	
10	and Ovarian Cancer" 244	
11	Exhibit 29 Article entitled "Association	
12	between Body Powder Use and Ovarian	
13	Cancer: The African American	
14	Cancer Epidemiology Study (AACES) 261	
15	Exhibit 30 Article entitled "Does Exposure to	
16	Asbestos Cause Ovarian Cancer?	
17	A Systematic Literature Review and	
18	Meta-analysis" 289	
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21	Cancer: A Meta-analysis" 293	
22	Exhibit 32 Chart 316	
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1	P R O C E E D I N G S	
2	THE VIDEOGRAPHER: We are now on the	
3	record. My name is Jody Urbati. I am a	
4	videographer for Golkow Litigation Services.	
5	Today's date is January 16, 2019, and the time is	
6	9:07 a.m.	
7	This video deposition is being held in	
8	Worcester, Massachusetts, in the matter of Talcum	
9	Powder Litigation, MDL No. 2738, for the United	
10	States District Court, District of New Jersey.	
11	The deponent today is Sonal Singh,	
12	M.D., M.P.H.	
13	Counsel will be noted on the	
14	stenographic record.	
15	The court reporter is Janet Sambataro	
16	and will now swear in the witness.	
17	SONAL SINGH, M.D., M.P.H.,	
18	having been duly sworn, after presenting	
19	identification in the form of a driver's license,	
20	deposes and says as follows:	
21	DIRECT EXAMINATION	
22	BY MR. ZELLERS:	
23	Q. State your name, please.	
24	A. Sonal Singh.	
25	Q. Dr. Singh, we are here to take your	

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<p>1 BY MR. ZELLERS:</p> <p>2 Q. Did you have an opportunity to review</p> <p>3 Deposition Exhibit 1 before today's deposition?</p> <p>4 A. Yes.</p> <p>5 Q. Have you brought with you or provided</p> <p>6 to counsel for production all materials in your</p> <p>7 possession that are responsive to the Notice of</p> <p>8 Deposition?</p> <p>9 A. I have.</p> <p>10 MR. ZELLERS: I will mark, as</p> <p>11 Deposition Exhibit 2, your report in this matter</p> <p>12 dated November 16 of 2018.</p> <p>13 (Rule 26 Expert Report of Sonal</p> <p>14 Singh, MD, MPH marked Exhibit 2.)</p> <p>15 BY MR. ZELLERS:</p> <p>16 Q. Is that correct?</p> <p>17 A. It is. It doesn't have the references.</p> <p>18 Q. Deposition Exhibit 2 is just a copy of</p> <p>19 your report itself. It ends at Page 66.</p> <p>20 Attached to your report were some additional</p> <p>21 materials; is that right?</p> <p>22 A. Yeah. Yeah. I just want to make sure</p> <p>23 because when I refer to the report, I understand</p> <p>24 it to include references and tables and so on.</p> <p>25 Q. Your report includes everything that</p>	<p>1 A. Yes.</p> <p>2 Q. If at any time today you need to look</p> <p>3 at any of those documents, they're available, and</p> <p>4 you're free to do that. Understood?</p> <p>5 A. It is understood.</p> <p>6 Q. You had attached or provided with your</p> <p>7 report a curriculum vitae, which I understand has</p> <p>8 been updated; is that right?</p> <p>9 A. Yes.</p> <p>10 MR. ZELLERS: We will mark your updated</p> <p>11 CV or curriculum vitae as Deposition Exhibit 3.</p> <p>12 (Sonal Singh, MD, MPH, FACP,</p> <p>13 curriculum vitae marked Exhibit 3.)</p> <p>14 MR. ZELLERS: Folks, I believe that</p> <p>15 Ms. Parfitt has distributed to you, before the</p> <p>16 deposition, Exhibit 3.</p> <p>17 BY MR. ZELLERS:</p> <p>18 Q. Can you tell us, just briefly, in what</p> <p>19 respect has Exhibit 3 been updated from the CV</p> <p>20 that was produced with your report in this</p> <p>21 matter?</p> <p>22 A. A few publications, and then I was</p> <p>23 elected to the fellowship of the American College</p> <p>24 of Physicians on January 1st. So I'm an FACP,</p> <p>25 and, yes, just a couple of publications,</p>
<p>1 was produced by plaintiffs' counsel as part of</p> <p>2 that report; is that right?</p> <p>3 And, Dr. Singh, I'm going to mark separately</p> <p>4 a number of the attachments --</p> <p>5 A. Okay.</p> <p>6 Q. -- to your report. Right now, I'm just</p> <p>7 trying to identify, is the body of your report --</p> <p>8 A. Yeah.</p> <p>9 Q. -- what we have identified and marked</p> <p>10 as Exhibit 2?</p> <p>11 MS. PARFITT: And if I may,</p> <p>12 Mr. Zellers, object. The body of the report,</p> <p>13 Dr. Singh may include as the body of the report</p> <p>14 plus all of its attachments.</p> <p>15 So just so the record is clear, but I</p> <p>16 understand how you'd like to conduct it, and</p> <p>17 that's fine.</p> <p>18 MR. ZELLERS: Understood.</p> <p>19 BY MR. ZELLERS:</p> <p>20 Q. Your counsel today has provided us with</p> <p>21 two bankers boxes of your report, plus all of the</p> <p>22 references from the report. Is that correct?</p> <p>23 A. Yes.</p> <p>24 Q. You also have brought that along with</p> <p>25 you; is that right?</p>	<p>1 presentations.</p> <p>2 Q. Is the curriculum vitae that we have</p> <p>3 marked as Deposition Exhibit 3 complete and up to</p> <p>4 date?</p> <p>5 A. Yes. Up to January 3rd. Yes.</p> <p>6 Q. Of 2019?</p> <p>7 A. 2019. Yeah.</p> <p>8 Q. Are there any further additions or</p> <p>9 corrections that need to be made to that CV?</p> <p>10 A. No.</p> <p>11 MR. ZELLERS: Deposition Exhibit 4 is</p> <p>12 the list of references from your report. And</p> <p>13 that goes from Page 67 to Page 75.</p> <p>14 Q. Is that correct?</p> <p>15 A. Yes.</p> <p>16 (List of references marked</p> <p>17 Exhibit 4.)</p> <p>18 MR. ZELLERS: Deposition Exhibit 5 is</p> <p>19 also from your report, and it's a listing of</p> <p>20 additional materials and data considered.</p> <p>21 (Additional Materials and Data</p> <p>22 Considered marked Exhibit 5.)</p> <p>23 BY MR. ZELLERS:</p> <p>24 Q. Is that right?</p> <p>25 A. Yes.</p>

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<p>1 MR. ZELLERS: Deposition Exhibit 6 is 2 an updated list of materials that defendants were 3 provided on January 13th of 2019. 4 (Updated Materials List marked 5 Exhibit 6.) 6 BY MR. ZELLERS: 7 Q. Is that correct? 8 A. Yes. 9 MR. ZELLERS: Folks, I need one more of 10 those back. Can I get one more? Thank you. 11 Deposition Exhibit 7 is a listing of 12 the trial testimony and expert deposition 13 testimony that you have provided in the last five 14 years. 15 (List of Trial Testimony marked 16 Exhibit 7.) 17 BY MR. ZELLERS: 18 Q. Is that right? 19 A. Yes. Actually, I have provided them an 20 update, as well, of that. So I don't know if 21 that was with you, but -- 22 Q. You have brought with you today an 23 updated list of expert deposition testimony for 24 the last five years? 25 A. Yes. No. 7 is the update.</p>	<p>1 testimony list, several additional documents that 2 counsel for plaintiffs has indicated are 3 responsive to the deposition notice. 4 Let me mark these. I have not had a chance 5 to look at them yet substantively. 6 THE WITNESS: Sure. 7 MR. ZELLERS: But I will and may, at a 8 later time today, have some questions for you. 9 THE WITNESS: Actually, I will say 10 there's a substantive document that's not here. 11 That's the table of rating that I created for the 12 report, and that should be part of the report. 13 MR. ZELLERS: Let me see if I can find 14 that. 15 BY MR. ZELLERS: 16 Q. It would be helpful to have that marked 17 as well; is that right? 18 A. Yes. 19 MR. ZELLERS: I will mark, as 20 Deposition Exhibit 9, the Amstar rating of 21 reviews, Pages 77 and 78 from your full report. 22 (Table 1 AMSTAR marked 23 Exhibit 9.) 24 BY MR. ZELLERS: 25 Q. Is that right?</p>
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<p>1 MR. ZELLERS: We will mark the updated 2 trial testimony list as Deposition Exhibit 8. 3 (List of Expert Deposition 4 marked Exhibit 8.) 5 MR. ZELLERS: And I understand that's 6 out of order, but I premarked one other exhibit. 7 BY MR. ZELLERS: 8 Q. What is the difference between 9 Deposition Exhibit 8, your updated list of 10 deposition testimony, and Exhibit 6, which is the 11 list of testimony you provided with your report 12 in November? 13 A. Yes. So there's an updated deposition 14 in a medical-legal case regarding standard of 15 care. 16 Q. You've added that -- 17 A. Yes. 18 Q. -- to -- 19 A. No. 7. 20 Q. -- what we have marked as Deposition 21 Exhibit 8? 22 A. Yes, it is. 23 Q. In addition to the materials that we 24 have marked already, which were provided, other 25 than the updated CV and the updated expert</p>	<p>1 A. Thank you. 2 MR. TISI: That was No. 9? 3 MR. ZELLERS: No. 9. 4 Let's go off the stenographic record. 5 You can keep the video going. 6 (Discussion off the stenographic record.) 7 MR. ZELLERS: Let's go back on the 8 stenographic record here. 9 Doctor, counsel for plaintiffs have 10 requested, and I am agreeable to marking a 11 complete copy of your report, including all of 12 the reference list and other materials that we've 13 marked individually, so the complete copy of your 14 report with all attachments, we will mark as 15 Deposition Exhibit 10. 16 (Rule 26 Expert Report of Sonal 17 Singh, MD, MPH, with attachments marked 18 Exhibit 10.) 19 BY MR. ZELLERS: 20 Q. Have we, though, marked individually 21 your complete record -- strike that. 22 Have we marked individually your complete 23 report prior to marking Exhibit 10? 24 A. Yes. 25 (Letter dated June 1, 2015</p>

6 (Pages 18 to 21)

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<p>1 marked Exhibit 11.) 2 BY MR. ZELLERS: 3 Q. The documents that were produced by 4 counsel this morning, Deposition Exhibit 11, is a 5 June 1st, 2015 letter with Janssen 6 Pharmaceuticals at the top to you from a 7 Dr. Zanca. Is that right? 8 A. Yes. 9 Q. Is this inviting you to a program? 10 A. Yes. Consultation for a panel on 11 products discussion manufactured by Johnson and 12 Janssen Pharmaceuticals. 13 Q. You're producing this in response to 14 the request asking for all communications between 15 yourself and any Johnson & Johnson company; is 16 that right? 17 A. That's what I understood it to be, 18 but -- yeah. 19 Q. You've gone and you've made a search, 20 and in the search for additional records 21 responsive to the Notice of Deposition, which we 22 marked as Exhibit 1, you have brought these 23 additional documents that we're marking here; is 24 that correct? 25 A. Well, I wouldn't say I made a search.</p>	<p>1 A. Yes. 2 MS. PARFITT: And for the record, 3 Mr. Zellers, and we can go ahead and redact the 4 copy later, but just so the record is clear, that 5 communication at the top to me from Dr. Singh was 6 simply, we asked him, do you have any 7 communications, and then he sent it to me. 8 MR. TISI: We'll redact the part with 9 your agreement. 10 MR. ZELLERS: Yes. We can do that at a 11 break -- 12 MS. PARFITT: At a break. 13 MR. ZELLERS: -- or, you know, at the 14 conclusion -- 15 MS. PARFITT: I appreciate that. Thank 16 you. 17 MR. ZELLERS: -- of the deposition. 18 BY MR. ZELLERS: 19 Q. Do you -- strike that. 20 The date of your e-mail at the bottom of 21 Page 1 is December 13th of 2018; is that right? 22 A. Yes. 23 Q. You had been retained as an expert? 24 A. Yes. 25 Q. And had submitted, in fact, your expert</p>
<p>1 I sort of read it, you know, decided, okay, what 2 other additional things that are requested and, 3 you know, recalled that I had had this 4 interaction with Johnson & Johnson employees. 5 Q. Are you comfortable that you have 6 brought with you today all of the documents that 7 are responsive to the Notice of Deposition? 8 A. Yes. 9 (Email string with top e-mail 10 dated December 27, 2018 marked Exhibit 12.) 11 MR. ZELLERS: All right. 12 BY MR. ZELLERS: 13 Q. Deposition Exhibit 12 is an e-mail 14 string. The very last e-mail is from you to -- 15 well, it's to Michelle Parfitt. I'm assuming 16 that you were forwarding to Ms. Parfitt just the 17 e-mail below, which is from you to Mr. Restaino 18 and then, apparently, the substantive e-mail is 19 at the bottom of the first page of Exhibit 12. 20 And this is a communication e-mail from you 21 to Lee-May Chen and others; is that right? 22 A. Yes. 23 Q. The subject is "Up-to-date references." 24 And the section on epidemiology and risk factors 25 of ovarian cancer; is that right?</p>	<p>1 report that we have marked previously; is that 2 right? 3 A. Yes. 4 Q. In this communication, Exhibit 12, do 5 you at all identify yourself as a paid, retained 6 expert for the plaintiffs in the talc litigation? 7 A. No. This was just a communication 8 about references, and I did not. 9 MR. ZELLERS: Dr. Singh, the next set 10 of documents that you have brought with you and 11 that we will mark collectively as Exhibit 13 are 12 your invoices. 13 (Invoices from Dr. Singh marked 14 Exhibit 13.) 15 BY MR. ZELLERS: 16 Q. The first invoice is dated July 14 of 17 2010. There's a total of five invoices. 18 The last invoice is from July 11, 2018, to 19 November 19, 2018. Is that right? 20 A. It should be 2017, not 2010. I'm 21 sorry. You mentioned 2010. 22 Q. And the date is 2017? 23 A. Yeah. I wanted to correct that. 24 Q. No. Thank you for correcting that. 25 I also have not had a chance to review,</p>

7 (Pages 22 to 25)

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<p>1 substantively, the invoices. 2 A. Sure. 3 Q. And I don't think we have a complete 4 copy. I'm going to ask you some questions in a 5 bit. 6 A. We do have a complete copy. I mean, in 7 terms of -- 8 Q. No. I understand that Exhibit 13 is a 9 complete copy of your invoices. 10 A. Yeah. 11 Q. That you now have the copy in front of 12 you. I don't have the copy in front of me. Keep 13 it. I'll have some questions for you a bit 14 later. 15 Have we now marked all documents that are 16 responsive to the Notice of Deposition which you 17 have produced here today? And let me withdraw 18 that. 19 Have we now marked all of the documents that 20 you have produced in response to the Notice of 21 Deposition? 22 A. Yeah. And I think that, you know, 23 there were some updated materials that I reviewed 24 that are part of this list. 25 Q. All right. And we need to be more</p>	<p>1 (Plaintiffs' Steering 2 Committee's Response and Objections to the 3 Notice of Oral and Videotaped Deposition of 4 Sonal Singh and Duces Tecum marked Exhibit 5 14.) 6 MR. ZELLERS: Back on the stenographic 7 record. 8 Dr. Singh, at the request of 9 plaintiffs' counsel, we will mark and 10 incorporate, as an Exhibit 14, the objections 11 that plaintiffs have filed to the deposition 12 notice. 13 MS. PARFITT: Thank you. 14 BY MR. ZELLERS: 15 Q. Have we identified and marked all of 16 the documents that you have produced pursuant to 17 the Notice of Deposition? 18 A. We have. 19 Q. To your knowledge, there are no 20 additional documents that you have in your 21 possession to produce; is that right? 22 A. I don't have any additional documents. 23 Q. The report that we have marked as 24 Deposition Exhibit 10, does that contain all of 25 the opinions that you intend to offer at trial?</p>
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<p>1 specific -- 2 A. Sure. 3 Q. -- as you understand from doing this 4 before. 5 You are referring to the list of updated 6 materials that was produced about a week ago? 7 A. Yeah. 8 Q. And that is Deposition Exhibit -- well, 9 strike that. 10 Just for the record, it was produced on 11 January 13th of 2019. The updated materials that 12 you have reviewed are listed on Deposition 13 Exhibit 6; is that right? 14 A. I have not reviewed these materials. I 15 was provided these materials. I have reviewed 16 portions of these. I have not had a chance to 17 review all of these materials. 18 Q. Anything else that you have responsive 19 to the deposition notice that we have not marked? 20 A. Give me a second. Let me read. 21 MS. PARFITT: If we can go off the 22 stenographic record for one moment while he's 23 doing it. 24 MR. ZELLERS: Sure. 25 (Discussion off the stenographic record.)</p>	<p>1 A. Actually, it's Deposition Exhibit 2. 2 Q. I understand. 3 A. Sorry. I'm a little confused here. 4 Q. That's fine. We don't want you to be 5 confused. And I asked you in the beginning to 6 tell me if you were getting confused. 7 We have marked Deposition Exhibit 10, which 8 contains all of the attachments -- 9 A. Okay. 10 Q. -- that we have separately marked; is 11 that right? 12 A. Yeah. Yeah. 13 Q. All right. The substance of your 14 report in terms of your written opinions, we have 15 marked separately as Exhibit 2; correct? 16 A. Yes. 17 Q. Does that report, Exhibit 2, and also 18 marked as Exhibit 10, contain all of the opinions 19 that you intend to offer at any trial or hearing 20 in this matter? 21 A. Well, I mean, it's hard to say it 22 contains all the opinions because there have been 23 some updates since then and, you know, science 24 evolves. 25 Q. Go ahead. Finish your answer.</p>

8 (Pages 26 to 29)

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<p>1 A. Science evolves, and, you know, we 2 update our opinions. So it's not like you offer 3 an updated opinion one day and that stays that 4 way.</p> <p>5 Q. Dr. Singh, this is our opportunity to 6 ask you questions about the opinions that you 7 have formed in this matter.</p> <p>8 As of today, does your report, which we've 9 marked as Exhibit 2 and also --</p> <p>10 MS. PARFITT: 10.</p> <p>11 Q. -- Exhibit 10, does that include all 12 of the opinions that you intend to testify to at 13 any trial or hearing of this matter?</p> <p>14 A. Yes. In terms of the causation 15 opinions, it does. But in terms of what 16 additional evidence has been reviewed or what 17 additional evidence has come up that, you know, 18 supports or refutes that, that might have 19 changed.</p> <p>20 Q. Dr. Singh, do you have any new or 21 additional opinions today that you intend to 22 offer at any trial or hearing of this matter 23 beyond the opinions that are included in your 24 report which we've marked as Exhibit 2 and 25 Exhibit 10?</p>	<p>1 that you intend to provide at any hearing or 2 trial in this matter?</p> <p>3 A. No. I'm relying on additional evidence 4 since then that has become available on this.</p> <p>5 Q. Let's -- I will ask you a new question. 6 Are all of the materials that you are 7 relying on in forming the opinions that you 8 expect to testify to at any hearing or trial, 9 identified either in your report, which we have 10 marked as Exhibit 10, or the updated list of 11 materials, which we have marked as Exhibit 6?</p> <p>12 A. Yes.</p> <p>13 MS. PARFITT: And 5.</p> <p>14 THE WITNESS: Okay. That's the part of 15 the whole report.</p> <p>16 MR. ZELLERS: Yes.</p> <p>17 BY MR. ZELLERS:</p> <p>18 Q. Exhibit 5 had previously been produced 19 as part of your report; is that right?</p> <p>20 A. Yes.</p> <p>21 Q. Is your report accurate?</p> <p>22 A. Yes.</p> <p>23 Q. Is your report complete?</p> <p>24 A. Yes, it is. It has some typos, but...</p> <p>25 Q. As we go along, if there's a typo --</p>
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<p>1 A. I'm sorry. I'm just not -- it's not 2 like I don't want to answer. I'm trying to 3 understand. When you say "additional opinions," 4 does it just mean like a causal opinion or does 5 it mean --</p> <p>6 Q. Dr. Singh, you have done this before; 7 right?</p> <p>8 A. Yeah. I'm trying to understand and I'm 9 trying to be responsive.</p> <p>10 Q. This is the defense opportunity to ask 11 you what opinions you intend to offer at any 12 hearing or trial of this matter.</p> <p>13 As of today, do you have any additional 14 opinions beyond the opinions that are set forth 15 in your report which you intend to offer at any 16 trial or hearing of this matter?</p> <p>17 A. I don't -- yeah -- I mean, it's, you 18 know, the opinions that I've offered are included 19 in the report.</p> <p>20 Q. Does your report identify -- and by 21 "report," we can refer to the report that we've 22 marked as Exhibit 10.</p> <p>23 A. Mm-hmm.</p> <p>24 Q. Does that report identify everything 25 that you are relying on in forming the opinions</p>	<p>1 strike that.</p> <p>2 Are there any typos that are substantive 3 typos?</p> <p>4 A. No. But sometimes it's we and they. I 5 can point that out at some point in time.</p> <p>6 Q. Are there any documents that were in 7 your possession that you produced to counsel 8 responsive to the deposition notice that have not 9 been produced here?</p> <p>10 A. No. Not that I can think of.</p> <p>11 Q. When were you first contacted by anyone 12 regarding the talc ovarian cancer litigation?</p> <p>13 A. So this was in 2017 by Attorney John 14 Restaino and Attorney Parfitt. I don't know the 15 exact day, but it has to be the, you know, spring 16 or summer of 2017. Spring or summer.</p> <p>17 Q. Your invoice, your first invoice is 18 dated July of 2017; is that right?</p> <p>19 A. Yeah. But, you know, it just covers a 20 period of background. It's not that they 21 contacted me and may have contacted me prior to 22 that.</p> <p>23 Q. Sometime in the first part of 2017, you 24 were contacted by Mr. Restaino and by 25 Ms. Parfitt; is that right?</p>

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1	A. Yes.	1 you asked to do?
2	Q. Anyone else?	2 A. So to clarify, I don't know I was
3	A. No.	3 retained at that time.
4	Q. What attorneys have you met with or	4 I was asked to consult on and provide, you
5	communicated with in the talc ovarian cancer	5 know, a review and look at -- look at the
6	litigation other than Ms. Parfitt and	6 literature on this topic. So I'm not sure --
7	Mr. Restaino?	7 depending on semantics, you can define it as
8	A. So Attorney Chris Tisi, and then I have	8 being retained or, you know -- I don't think we
9	communicated on the phone with Attorney Gates.	9 had an "agreement," but I was asked to provide a
10	Is that -- no. Margaret?	10 consultation on that matter. And these invoices
11	Q. Margaret Thompson?	11 include that consult.
12	A. Thompson. Yeah.	12 Q. In the first part of 2017, what were
13	Q. Do you know Margaret Thompson?	13 you asked by counsel for plaintiffs in the talc
14	A. I mean, I know her as an attorney. I	14 litigation, ovarian cancer talc litigation, to
15	just spoke to her on the phone for 30 minutes.	15 do?
16	Q. Have you ever met in person with	16 MS. PARFITT: Objection. Limit your
17	Ms. Thompson?	17 response to communications with regard to simply
18	A. No.	18 the requests, not the conversations.
19	Q. Have you ever had any communications or	19 A. Yeah. So I was asked to review, you
20	interactions with Ms. Thompson other than the	20 know, the literature on talcum powder products
21	30-minute-or-so phone call?	21 and ovarian cancer.
22	A. No.	22 Q. Had you ever done that before?
23	Q. When was that conversation with	23 MS. PARFITT: Objection. Form.
24	Ms. Thompson?	24 A. I mean, when I say "review," yes, I had
25	A. I don't know. A couple of days ago.	25 read about talcum powder products and ovarian
	Page 35	Page 37
1	Yeah.	1 cancer.
2	Q. It was in preparation for the	2 Q. You were asked to make a systematic
3	deposition; is that right?	3 review of the literature relating to talcum
4	A. Yes.	4 powder products and ovarian cancer; is that
5	Q. How much time did you spend with the	5 right?
6	lawyers for plaintiffs preparing for this	6 A. Not necessarily a systematic review,
7	deposition?	7 but they asked me to, you know, review the
8	A. With the lawyers, I've spent -- yeah,	8 literature, and I had been reading it from
9	I'd have to go back, maybe five or six hours.	9 other -- from my own reading in different
10	But, again, I can't be very precise.	10 journals, and they asked me to, you know, review
11	Q. Any other attorneys that you've	11 and, you know, provide my own opinion on that
12	communicated with that you understand to	12 matter.
13	represent the plaintiffs other than the attorneys	13 Q. At some point, you were retained,
14	that you have identified?	14 agreed --
15	A. No. Not that I can recall.	15 A. Yes.
16	Q. Do you understand that you are -- or	16 Q. -- to work with the attorneys for
17	strike that -- have been retained as an expert by	17 plaintiffs; is that right?
18	plaintiffs in the MDL talc ovarian cancer	18 A. Yes.
19	litigation?	19 MS. PARFITT: Objection. Form.
20	A. Right now, I do. Yes.	20 Q. Were you ever given any new or
21	Q. Is there any other ovarian cancer	21 additional assignment in the MDL talc ovarian
22	litigation matter that you have been retained in?	22 cancer litigation other than to do a literature
23	A. No.	23 review?
24	Q. When you were retained back in early	24 MS. PARFITT: Objection. Form.
25	2017 by Mr. Restaino and Ms. Parfitt, what were	25 A. Well, I mean, I guess I was, you know,

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<p>1 asking the causal question that is the use of 2 talcum powder products a cause of ovarian cancer. 3 Q. You looked at the literature -- 4 A. Mm-hmm. 5 Q. -- to try to determine if you could 6 answer that question; is that right? 7 A. Yeah. So we looked at -- I looked at 8 the literature and, you know, obviously, looked 9 at other documents and performed a methodology, 10 and we can discuss that in detail later. 11 But the primary question of interest is -- 12 was, is the use of perineal use of talcum powder 13 products associated with and causally related to 14 the development of ovarian cancer. 15 Q. That has been the request from 16 plaintiffs' counsel to you in terms of providing 17 expert opinions in this matter; is that right? 18 A. Yes. 19 Q. When were you first asked to prepare a 20 report setting forth your opinions? 21 A. Again, I can't recall the specific 22 timelines. I'm sorry. It's been a while. 23 Q. Were you asked by plaintiffs to assume 24 any facts? 25 A. No. I mean, at that time, you know,</p>	<p>1 that right? 2 A. Yes. 3 Q. How much are you charging per hour for 4 your time in this case? 5 A. \$600 an hour. 6 Q. You have invoices in front of you. 7 What is the total value of the time that 8 you've spent on the talc ovarian cancer 9 litigation, whether that's been billed or not 10 billed, paid or not paid? 11 A. I can't calculate the time. I can 12 calculate -- 13 Q. Can you estimate it for us? 14 A. I don't want to give a number that's 15 inaccurate; right? I mean, these are accurate 16 numbers. But I will just have to sum it up -- 17 Q. Let's try to do this as quickly as we 18 can. 19 A. Yeah. 20 Q. The five invoices that you've marked 21 or -- strike that -- that we have marked as 22 Deposition Exhibit 13 -- 23 A. Mm-hmm. 24 Q. -- does that capture all of your time 25 on the ovarian cancer talc litigation through</p>
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<p>1 and even prior to that, I was reading the 2 literature. I was, you know, agnostic to it. 3 And, yeah, I didn't -- in fact, I didn't 4 form an opinion on this topic until -- until the 5 very end of, you know, 2018. 6 Q. When you say you were "agnostic" -- 7 A. Mm-hmm. 8 Q. -- to this issue, whether or not 9 talcum powder products are associated with 10 ovarian cancer, do you mean that you had not 11 formally come up with or developed any opinions 12 prior to becoming involved as an expert for 13 plaintiffs? 14 MS. PARFITT: Objection. Form. 15 A. Yeah. So my -- what I mean is I had 16 not systematically reviewed the literature to 17 form an opinion whether talcum powder products 18 is, so I had not done the processes required to, 19 you know, develop an opinion. 20 Q. All right. You have now done that and 21 you're here to talk about it; is that right? 22 A. Yes. 23 Q. Plaintiffs' counsel have paid you for 24 your time to review documents, the literature, 25 prepare a report, and render your opinions; is</p>	<p>1 November of last year? 2 A. Yes. 3 Q. Is there any additional time that you 4 have spent on the talcum powder litigation up 5 through November of last year that's not 6 reflected in the invoices we've marked as 7 Exhibit 13? 8 A. No. 9 Q. All right. First invoice, what is the 10 total? 11 A. 9,300. 12 Q. The second invoice, total? 13 A. Twenty, one, zero, zero. 14 Q. 21,000? 15 A. 20,100. 16 Q. Next invoice, total? 17 A. 5,100. 18 Q. Next invoice, total? 19 A. 19,200. 20 Q. Last invoice, total? 21 A. 40,800. 22 Q. Since November of 2018, can you 23 estimate for us the number of hours that you have 24 spent on this matter? 25 A. So, I mean, apart from three to five</p>

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<p>1 hours that I spent with the lawyers, I don't 2 know. Maybe I've spent 10, 15 hours on my own. 3 Maybe more. I just don't have that exact number. 4 I'll have to look.</p> <p>5 Q. At some point, you will submit an 6 invoice --</p> <p>7 A. Yes.</p> <p>8 Q. -- for your time; is that right?</p> <p>9 A. After today. Yeah.</p> <p>10 Q. Have you been disclosed as an expert in 11 any other talcum powder proceeding aside from 12 this case?</p> <p>13 A. No.</p> <p>14 Q. What percent of your professional time 15 do you currently spend performing work as a 16 consultant?</p> <p>17 A. Yeah. It could be -- you know, varies. 18 It could be 20 to 30 percent of my time. 19 Sometimes 20 percent.</p> <p>20 Q. Has that 20 to 30 percent of your 21 professional time spent working as a consultant, 22 has that been consistent for the past five, ten 23 years?</p> <p>24 A. Yeah. So, actually, it's been less in 25 the past, sometimes a little more, but, you know,</p>	<p>1 A. Okay.</p> <p>2 Q. What percentage of income is from 3 consulting on litigation matters? Give us an 4 estimate.</p> <p>5 A. Okay. Yeah. Maybe 30 percent. I'm 6 doing my best to give you --</p> <p>7 Q. Is that your -- you're here to be 8 truthful; correct?</p> <p>9 A. Yeah.</p> <p>10 Q. Is 30 percent of your income from 11 consulting on litigation matters, is that your 12 best estimate as you sit here today?</p> <p>13 MS. PARFITT: Objection. Some clarity 14 as to over what period of time?</p> <p>15 A. Yeah. Over five years, I mean, that's 16 my best estimate.</p> <p>17 Q. Is it a little bit more now?</p> <p>18 MS. PARFITT: Objection.</p> <p>19 A. Well, over the last year, yes, but over 20 five.</p> <p>21 Q. Over the last year, what are you 22 working on? You're working on the talc 23 litigation; is that right?</p> <p>24 MS. PARFITT: Objection. Form.</p> <p>25 Q. Doctor, did you hear my question?</p>
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<p>1 overall, I would average out, you know, sort of 2 as I was preparing over the last five years, it 3 would probably be 15 to 20 percent, but, you 4 know --</p> <p>5 Q. Currently, though, best estimate is 20 6 to 30 percent; is that right?</p> <p>7 A. Over the last six months. Yes.</p> <p>8 Q. What percent of your income is from 9 consulting on litigation matters?</p> <p>10 A. Again, I can't give you my gross 11 income. I mean, I --</p> <p>12 Q. I don't want your gross income. I'm 13 asking just for -- I just want to know a 14 percentage of your income that comes from 15 consulting in litigation cases.</p> <p>16 A. Well, again, you know, consulting is 17 not just litigation for me. As I said, I've 18 consulted, you know, including for J&J, Eli 19 Lilly, others, that's, you know, on my CV. 20 Overall, and other, you know, insurers. So it's 21 not just -- first of all, it's not litigation 22 consulting that I do.</p> <p>23 Q. Dr. Singh --</p> <p>24 A. Yes.</p> <p>25 Q. -- listen to my question, if you can.</p>	<p>1 A. Yeah. Yeah.</p> <p>2 Q. What other litigations are you serving 3 as an expert for?</p> <p>4 A. Viagra.</p> <p>5 Q. You're an expert for plaintiffs in 6 Viagra; is that right?</p> <p>7 A. Yes.</p> <p>8 Q. What other litigations are you serving 9 as an expert for plaintiffs in?</p> <p>10 A. None other than that, that I know of.</p> <p>11 Q. Are you still working as an expert for 12 plaintiffs in the Lipitor litigation?</p> <p>13 A. That ended several years ago, as far as 14 I recall.</p> <p>15 Q. You list two Tasigna cases against 16 Novartis.</p> <p>17 Are you still working on those cases?</p> <p>18 A. That ended in, I think, in -- yeah, it 19 ended.</p> <p>20 Q. You list on your expert testimony, 21 2018; is that right?</p> <p>22 A. Yes. I mean, but I listed everything 23 that was -- I have done in the five years. It 24 doesn't mean that those are ongoing.</p> <p>25 Q. You are no longer serving as an expert,</p>

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<p>1 to your knowledge, in the Tasigna cases; is that 2 right? 3 A. Yes. 4 Q. How about the Rahmoeller versus Walmart 5 litigation, is that still ongoing? 6 A. That stopped, but, you know, it's been 7 a year since I've heard anything, so I don't 8 know. 9 Q. You also provided testimony in a matter 10 of Brufett versus Washington University. 11 Is that still ongoing? 12 A. That has ended. 13 Q. Is it fair to say that all of the cases 14 in which you have been retained in the past -- 15 A. Sure. 16 Q. -- as an expert for plaintiffs 17 involving a pharmaceutical company defendant have 18 involved prescription medications? 19 A. Yeah. Prescription medications, issues 20 of systems. I mean, that's my area of research. 21 Q. How much of your work is for plaintiffs 22 versus defense as a litigation consultant? 23 MS. PARFITT: Objection. Form. 24 A. Yeah. I mean, over the last ten years, 25 I've provided opinions to both sides, but I have</p>	<p>1 A. I don't understand. Like, what is a 2 personal injury? Is it like somebody -- MVA kind 3 of case or -- 4 Q. Well, you've been involved in Lipitor. 5 You have been involved in a number of other 6 litigations. Let me withdraw that question. Let 7 me make it a little more precise. 8 Have you ever been retained in a case 9 involving cosmetic products? 10 A. No. 11 Q. In the preparation of your report, did 12 you review the other expert reports provided by 13 plaintiffs in this MDL litigation? 14 A. I mean, other than those cited, I have 15 not had a chance to review them. 16 Q. The updated materials list that you 17 have produced here today, which we've marked as 18 Exhibit 6, it contains a number of expert reports 19 from plaintiff experts in the MDL talcum powder 20 ovarian cancer litigation; is that right? 21 A. Yes. 22 Q. What is Exhibit 6? It says "Updated 23 materials." 24 Does that mean updated materials that you 25 have reviewed and considered?</p>
<p>1 not been, you know -- when you say how much of 2 your work, is it time spent or -- 3 Q. In terms of time spent, most of your 4 work is for plaintiffs; is that right? 5 A. I would say, yeah, 70 percent. Yeah. 6 Q. And it can be more than 70 percent; is 7 that right? 8 MS. PARFITT: Objection to form. 9 Objection to form. 10 A. Well, it depends, again, for frame of 11 time and, you know, if you say yes, in the last 12 year, yes. More than -- 13 Q. Last year, it's been more than 14 70 percent -- 15 A. Sure. 16 Q. -- for plaintiffs; is that right? 17 A. Yes. 18 Q. Have you ever been retained in a case 19 involving asbestos? 20 A. No. 21 Q. Have you ever been involved in a 22 case -- strike that. 23 Have you ever been retained in a case 24 involving personal injuries? 25 MS. PARFITT: Objection. Form.</p>	<p>1 A. They were provided to me at some point 2 in time between November 15th, and I haven't 3 even -- I have actually not reviewed any of the 4 expert reports other than those that have been 5 cited in my report. 6 Q. This list of updated materials is 7 something that was provided to you by plaintiffs' 8 counsel; is that right? 9 A. Yes. 10 Q. Have you reviewed any of the materials 11 that are on the updated materials list, which we 12 have marked as Exhibit 6? 13 A. Yeah. I had a chance to review some of 14 them. 15 Q. Which materials that are identified on 16 Exhibit 6, updated materials, have you actually 17 looked at, reviewed, and considered? 18 A. Yeah. So, I mean, I was already aware 19 of the Health Canada assessment and, you know, so 20 that's -- I've reviewed. 21 I have reviewed, obviously, the Up to Date, 22 that child sent. 23 I have reviewed the state of the science. I 24 have reviewed -- 25 Q. What do you mean "state of science"?</p>

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<p>1 Where is that listed? 2 A. No. 2. No. 2. 3 Q. All right. You've reviewed Chen Up to 4 Date. You have reviewed the second reference, 5 Committee on the State of Science. 6 A. Yeah. 7 Q. Have you reviewed the Evolving 8 Paradigms and Research and Care? 9 A. Yes. 10 Q. The Draft Screening Assessment, Talc 11 Health Canada? 12 A. Yes. 13 Q. The EFSA Science Committee? 14 A. Yes. 15 Q. The EPA documents that are listed? 16 A. No. 17 Q. The FDA Ingredients Talc? 18 A. No. 19 Q. The Fadak Burnola citation? 20 A. Yes. 21 Q. The Federal Register, Volume 81? 22 A. Yes. 23 Q. Have you reviewed the Kemp hearing 24 opinion and order? 25 A. I don't think so.</p>	<p>1 Q. Did you review Talc Information Sheet, 2 Health Canada? 3 A. Yes. 4 Q. Talc Potential Risk of Lung Effects? 5 A. Yes. 6 Q. Task Force on Science Risk Assessment? 7 A. Yes. 8 Q. The Weed Reference? 9 A. Yes. 10 Q. And the Zervomanolakis citation? 11 A. Yes. 12 Q. Have we covered all of the materials 13 that you've reviewed on the updated materials 14 list? Is that right? 15 A. Yes. 16 Q. Have you communicated or had any 17 discussions with any of the other plaintiffs' 18 experts in the talc ovarian cancer litigation? 19 A. No. 20 Q. Have you reviewed any deposition or 21 trial transcripts from prior talcum powder cases? 22 A. Not prior cases, but I reviewed the 23 deposition of Dr. Plunkett. 24 Q. Plunkett? 25 A. Plunkett.</p>
<p>1 Q. The Keys Model Information Bias? 2 A. Yes. 3 Q. Kunz? 4 A. Yes. 5 Q. Official Journal of the European Union? 6 A. No. 7 Q. Qiao, Q-I-A-O? 8 A. No. 9 Q. Risk Management Scope, Talc Health 10 Canada? 11 A. No. 12 Q. You have not reviewed any of the 13 plaintiff expert reports submitted in this 14 matter. Is that your testimony? 15 A. Yeah. They were provided to me and, 16 you know, I formed my opinion independent of 17 them. 18 Q. Have you reviewed any of the reports 19 prepared and submitted by plaintiffs that are 20 identified in your updated materials? 21 A. No. Except if any of them were cited, 22 that's the one that I reviewed it in. 23 Q. Yup. Did you review Talc Canada Plain 24 Language Summary? 25 A. Yes.</p>	<p>1 Q. Have you reviewed any other depositions 2 of experts that have been taken in the MDL 3 ovarian cancer talcum powder litigation? 4 A. No. 5 Q. Did you conduct any independent 6 investigation to reach your opinions? 7 A. I mean, I -- my opinion is independent 8 of these. 9 Q. As I understand it, what you did is you 10 were asked by plaintiffs to review and consider 11 and form an opinion regarding the causal 12 question. Is that right? 13 A. Yes. 14 Q. To do that, you went and you reviewed a 15 number of different literature sources; is that 16 right? 17 MS. PARFITT: Objection. Misstates his 18 opinion. He indicated he had reviewed some prior 19 to that. 20 MR. ZELLERS: Ms. Parfitt, just object, 21 form. And let's not have speaking objections. 22 MS. PARFITT: And you won't find that I 23 will. I want to make sure we have an accurate 24 record. 25 I can wait until the very end and do a</p>

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<p>1 recross, but I'm trying to clean it up. 2 BY MR. ZELLERS: 3 Q. Doctor, go ahead. 4 A. I didn't get the question. Can you 5 repeat? 6 Q. Sure. The question is: You were asked 7 to form an opinion by plaintiffs. You went out 8 and you reviewed the literature. 9 You considered the literature and you 10 formulated an opinion; is that right? 11 A. Yes. 12 MS. PARFITT: Objection. 13 A. And it was an independent opinion. 14 Q. An independent opinion based upon your 15 review of the literature; is that right? 16 A. Yeah. Based upon my review of the 17 literature and the documents and, you know, 18 whatever was available to me. 19 Q. And those -- all of those materials 20 that you reviewed, considered and relied upon 21 have been included in the exhibits that we've 22 marked in this deposition; is that right? 23 A. That is correct. 24 Q. Was there anything that you asked 25 plaintiffs' counsel for to prepare your report</p>	<p>1 not necessarily the ones who may have helped me 2 in printing articles. 3 Q. My question is: Who helped prepare 4 your report other than yourself? 5 MS. PARFITT: Objection. Objection. I 6 believe you've asked that. He's answered it. 7 A. Okay. Let me answer. 8 Q. Sure. Go ahead, Doctor. Please 9 answer. 10 A. I prepared my report. 11 Q. I understand you prepared your report. 12 My question is: Did anyone assist you in 13 preparing your report? 14 MS. PARFITT: Objection. 15 A. No. 16 Q. You were provided some materials by 17 plaintiffs' counsel; is that right? 18 A. Yes. 19 Q. You reviewed some of those materials, 20 but not all of those materials; is that right? 21 A. Yes. 22 Q. In terms of the references, Exhibit 4. 23 And that is identified as Pages 67 through 75 in 24 your full report that we marked as Exhibit 10. 25 But looking at your references, Exhibit 4,</p>
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<p>1 that you were not provided with? 2 A. No. 3 Q. Did anyone assist you in the 4 preparation of your report? 5 A. Well, I may have asked them to print, 6 like, these things and, you know, I may have 7 asked my -- I had means to print some articles 8 when I was preparing that. 9 Q. Do you have a staff? 10 A. Yes. 11 Q. All right. Who is your staff? 12 A. I have several staff. I have, you 13 know, three offices. 14 Q. So you have three offices? 15 A. Yes. 16 Q. In those three offices, do you have 17 folks who help you? 18 A. Yeah. 19 MS. PARFITT: Objection to form. 20 Q. Do you have folks who do research? 21 MS. PARFITT: Objection. Form. 22 A. So, I mean -- so I have a dual 23 appointment in my research, and so I have 24 clinical staff and my research staff. I have 25 people who work with me on projects. They are</p>	<p>1 some of these references were provided by counsel 2 for plaintiffs to you; is that right? 3 MS. PARFITT: Objection. 4 A. Yes. 5 Q. Some, you went out and found on your 6 own; is that right? 7 A. Well, it's not that way. It's the 8 majority of the references, I would say 9 95 percent of, are my own work, and, you know, I 10 had questions about the product and the 11 mechanism, what additional documents were 12 available. 13 And that's a process. And documents were 14 provided, and they need to be cited and are 15 cited. 16 Q. Are you able to tell us, of the 17 references that you cite, Deposition Exhibit 4, 18 which ones came from plaintiffs' counsel and 19 which ones you came up with on your own? 20 MS. PARFITT: Objection. Form. 21 A. Sure. 22 Q. You could do that if we went through 23 one by one? 24 A. Yeah. 25 Q. Let me ask you the same question with</p>

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<p>1 respect to the additional materials and data 2 considered, Exhibit 5. 3 Do you see that? 4 A. Yes. 5 Q. What's the difference between 6 Exhibit 4, references, and Exhibit 5, additional 7 materials and data considered? 8 A. So as I went about and did my, you 9 know, systematic review and, you know, umbrella 10 review, I gathered all the materials and, you 11 know, I included studies and data that provided 12 original data on the causal question that we 13 discussed. 14 Q. Doctor, my question was simply, what's 15 the difference between references and additional 16 materials and data considered? 17 A. So the additional materials are those 18 that were, I would say, you know, reviewed, were 19 still reviewed in forming the opinion, but they 20 are not -- they don't -- they don't form the 21 basis of my opinion. 22 Q. The materials that you relied on in 23 forming your opinion are what you've set forth as 24 your references, Exhibit 4; is that right? 25 MS. PARFITT: Objection.</p>	<p>1 additional materials and data considered, items 2 that are listed in Exhibit 5? 3 A. By reviewed and considered, I mean, 4 have I read every word of it? No. I reviewed 5 and considered. 6 Q. Who prepared the additional materials 7 and data considered list? 8 MS. PARFITT: Objection. 9 A. I prepared the list, but I asked them 10 also to help me with what materials they had 11 sent. 12 Q. The lawyers for plaintiffs; is that 13 right? 14 A. Yes. 15 Q. So in your documents, you do have a 16 listing of the materials that were provided to 17 you by plaintiffs' counsel for consideration; is 18 that right? 19 MR. LOCKE: Objection. Misstates the 20 testimony. 21 A. I'm sorry. Can you repeat? 22 Q. Sure. The question is: You do have, 23 because you requested it, a listing of the 24 documents and materials that were provided to you 25 by plaintiffs' counsel for you to consider;</p>
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<p>1 A. Yeah. I mean, and then things that, 2 you know -- obviously, for the report, it is the 3 references. Yeah. 4 I did rely on these to review them and, you 5 know -- 6 Q. Did you -- strike that. 7 MS. PARFITT: For the record, that was 8 Exhibit 5. 9 MR. ZELLERS: Well, no -- well, the 10 references is Exhibit 4. The additional 11 materials and data considered is Exhibit 5. 12 MS. PARFITT: Correct. 13 BY MR. ZELLERS: 14 Q. So looking at Exhibit 5, additional 15 materials and data considered, were some of these 16 materials provided to you by counsel for 17 plaintiffs? 18 A. Yeah. They may have been. These are 19 data considered. So I'm not as familiar with 20 these as -- 21 Q. Have you -- are you finished? 22 A. Yeah. I'm not -- I mean, I reviewed 23 them. I, you know -- 24 Q. Is it your testimony that you have 25 reviewed and considered each and every one of the</p>	<p>1 correct? 2 MS. PARFITT: Objection. Misstates his 3 testimony. 4 He didn't say he got a list. 5 MR. ZELLERS: Okay. Ms. Parfitt, 6 please, form, foundation. You know, he can 7 testify, and whatever he's testified to, it's 8 part of the record. 9 MS. PARFITT: Sure. And, Mr. Zellers, 10 I am not trying to interrupt your deposition, 11 trust me on that, but I do want some clarity to 12 the record. 13 MR. ZELLERS: Great. That's what we're 14 doing right here. 15 MS. PARFITT: Well -- 16 MR. ZELLERS: We've now asked the 17 question two or three times. 18 BY MR. ZELLERS: 19 Q. Do you have the question? 20 MS. PARFITT: It's a little different. 21 But go ahead. 22 A. So I had asked for additional materials 23 in understanding the causal question between 24 talcum powder products and ovarian cancer. 25 Q. What additional materials did you</p>

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<p>1 request?</p> <p>2 A. I requested additional materials</p> <p>3 regarding what are the constituents of talcum</p> <p>4 powder products. I -- you know, additional</p> <p>5 materials regarding testing of talcum powder</p> <p>6 products -- I -- you know, anything to, you know,</p> <p>7 enhance my understanding whether there's evidence</p> <p>8 to support or refute what we are seeing in the</p> <p>9 epidemiologic studies about an increased risk of</p> <p>10 ovarian cancer with talcum powder products.</p> <p>11 Q. When you requested these materials,</p> <p>12 testing materials, ingredient materials and any</p> <p>13 other materials, did you want to see all of the</p> <p>14 materials that were available so that you could</p> <p>15 form your opinion?</p> <p>16 MS. PARFITT: Objection. Form.</p> <p>17 A. All is -- you know, there's only so</p> <p>18 many hours. I mean, you know, I think I wanted</p> <p>19 to see as much as, you know, was relevant to</p> <p>20 forming an opinion.</p> <p>21 Q. Well, you asked for records of testing</p> <p>22 and you were provided with records, and we'll</p> <p>23 take a look at it --</p> <p>24 A. Sure.</p> <p>25 Q. -- that purport to show that there is</p>	<p>1 material, I can tell you, there's not enough time</p> <p>2 to review all of it. I mean, if somebody has,</p> <p>3 that's great. I can't.</p> <p>4 Q. Are you done?</p> <p>5 A. Yes.</p> <p>6 Q. Did you, when you made that request,</p> <p>7 intend for plaintiffs to provide you with all of</p> <p>8 the information that was available related to</p> <p>9 testing or related to ingredients or whatever</p> <p>10 other issues you requested documents on?</p> <p>11 MS. PARFITT: Objection. Form.</p> <p>12 A. Yes.</p> <p>13 Q. All right. In your report, you cite --</p> <p>14 and this is in references -- to the depositions</p> <p>15 of witnesses in the talcum powder litigation.</p> <p>16 For example, and let's take a look at Exhibit 4,</p> <p>17 your references, Cite No. 4 is to the deposition</p> <p>18 of Linda Loretz.</p> <p>19 Did you review this?</p> <p>20 A. Yes, I did.</p> <p>21 Q. And who is she?</p> <p>22 A. I don't recall offhand, who she is.</p> <p>23 Q. Is that information that was provided</p> <p>24 to you by plaintiffs' counsel?</p> <p>25 A. Yes.</p>
<p style="text-align: center;">Page 63</p> <p>1 asbestos or asbestos has been found in talcum</p> <p>2 powder; correct?</p> <p>3 A. I mean, that's not the only -- that's</p> <p>4 not only --</p> <p>5 Q. Understood.</p> <p>6 MS. PARFITT: Excuse me. Let him</p> <p>7 finish his answer, if you will, please. I'm not</p> <p>8 sure he was done. Appreciate that.</p> <p>9 Q. Are you done?</p> <p>10 A. No. I'm not. I want to finish my</p> <p>11 answer.</p> <p>12 Q. Okay.</p> <p>13 A. So I requested documents because I</p> <p>14 wanted to understand what constitutes talcum</p> <p>15 powder products, and whether it is asbestos or</p> <p>16 whether it is other heavy metals, that's sort of</p> <p>17 a separate answer, and we can discuss that, and</p> <p>18 I'm sure we will.</p> <p>19 But I wanted to understand the constitution</p> <p>20 of the product and, you know, whether there were</p> <p>21 additional studies on, you know, whether it was</p> <p>22 mechanisms that -- so because -- so that's what</p> <p>23 the request was for.</p> <p>24 And the documents were provided. And my</p> <p>25 review, looking at the complexity and volume of</p>	<p style="text-align: center;">Page 65</p> <p>1 Q. Who is Joshua Muscat, reference list,</p> <p>2 Cite No. 5?</p> <p>3 A. I think he did one of the</p> <p>4 meta-analyses. He's an author of one of the</p> <p>5 meta-analyses as well.</p> <p>6 Q. Who is Alice Blount, Cite 27?</p> <p>7 A. Yeah. They did a study on talc and</p> <p>8 also I was deposed on that.</p> <p>9 Q. Did you request that deposition or was</p> <p>10 that provided to you?</p> <p>11 MS. PARFITT: Objection.</p> <p>12 A. I requested information on -- as I</p> <p>13 said, my request wasn't for deposition -- you</p> <p>14 know, all documents that helped me answer the</p> <p>15 causal question.</p> <p>16 Q. Whether they support plaintiffs'</p> <p>17 position or refute plaintiffs' position; is that</p> <p>18 right?</p> <p>19 A. To answer the causal question. That's</p> <p>20 what --</p> <p>21 Q. You wanted, though, all relevant</p> <p>22 documents, whether they supported plaintiffs'</p> <p>23 position or whether they refuted plaintiffs'</p> <p>24 position; correct?</p> <p>25 A. To answer the causal questions. I</p>

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<p>1 don't --</p> <p>2 Q. Can you not answer that question?</p> <p>3 MS. PARFITT: Objection. I believe --</p> <p>4 A. I'm answering your question.</p> <p>5 MS. PARFITT: -- he did.</p> <p>6 Q. My question is: When you requested</p> <p>7 documents from plaintiffs' counsel on various</p> <p>8 topics, did you expect to receive whatever</p> <p>9 documents may support plaintiffs' position and</p> <p>10 whatever documents may refute plaintiffs'</p> <p>11 position?</p> <p>12 A. Yes.</p> <p>13 Q. All right. Who is John Hopkins,</p> <p>14 reference item -- strike that -- reference list,</p> <p>15 Cite 33?</p> <p>16 A. I think it's -- yeah. It's a</p> <p>17 deposition on behalf of J&J, I think.</p> <p>18 Q. Do you know who Mr. Hopkins is?</p> <p>19 A. No, I don't.</p> <p>20 Q. Do you know what role he had with</p> <p>21 talcum powder?</p> <p>22 MS. PARFITT: Objection. Form.</p> <p>23 A. I mean, he was deposed in this</p> <p>24 litigation and he provided testimony.</p> <p>25 Q. The question is: Do you know what role</p>	<p>1 A. So we can -- we can go back to the</p> <p>2 sections where I cite these and then we can</p> <p>3 discuss. Is that okay?</p> <p>4 Q. No. Well, and if you need to -- if you</p> <p>5 can't answer a question, tell me you can't answer</p> <p>6 a question.</p> <p>7 My question is: For these five or six folks</p> <p>8 who you have quoted a snippet from their</p> <p>9 deposition, did you review their entire</p> <p>10 transcript or did you just review an excerpt?</p> <p>11 MS. PARFITT: Objection to the form.</p> <p>12 A. So the answer will be, we have to go</p> <p>13 one by one.</p> <p>14 Q. All right. For Mr. Hopkins, did you</p> <p>15 review his entire deposition?</p> <p>16 A. No.</p> <p>17 Q. For Ms. Pier, did you review her entire</p> <p>18 deposition?</p> <p>19 A. No.</p> <p>20 Q. For Ms. Blount, did you review her</p> <p>21 entire deposition?</p> <p>22 A. I recall, yes.</p> <p>23 Q. Yes, you did?</p> <p>24 A. Yes.</p> <p>25 Q. For Ms. Loretz, did you review her</p>
<p>1 Mr. Hopkins played in and with talcum powder?</p> <p>2 A. He was providing testimony on behalf of</p> <p>3 the company. Is that --</p> <p>4 Q. Other than that, do you know anything</p> <p>5 about what he did on behalf of the company?</p> <p>6 A. No.</p> <p>7 Q. Do you know what his positions were?</p> <p>8 A. I don't recall.</p> <p>9 Q. Do you know what his duties and</p> <p>10 responsibilities were?</p> <p>11 A. I don't review that as a part of my</p> <p>12 deposition, is to review positions and do</p> <p>13 responsibilities.</p> <p>14 Q. And who is Julie Pier, Item 35?</p> <p>15 A. She was testifying on behalf of Imerys,</p> <p>16 I think.</p> <p>17 Q. Do you know her position?</p> <p>18 A. I don't review -- you know, she was</p> <p>19 testifying for the company, as that's as far as I</p> <p>20 know. Again, I don't know what role she was</p> <p>21 playing and what she does.</p> <p>22 Q. Did you read, for each of these</p> <p>23 depositions that you reference and cite to, did</p> <p>24 you read just that section or did you read the</p> <p>25 entire transcript?</p>	<p>1 entire deposition?</p> <p>2 A. Yes.</p> <p>3 Q. Did -- strike that.</p> <p>4 For Mr. Muscat, did you review his entire</p> <p>5 deposition?</p> <p>6 A. Yes, I did.</p> <p>7 Q. Did you review all of the exhibits to</p> <p>8 those depositions?</p> <p>9 A. Again, those are pages and pages of</p> <p>10 documents. I don't know that -- if I reviewed</p> <p>11 every single page of it.</p> <p>12 Q. Is it your practice, outside of</p> <p>13 litigation, to rely on excerpts of deposition</p> <p>14 testimony?</p> <p>15 A. Well, I mean, when you say "excerpts of</p> <p>16 depositions," when I reviewed evidence, when I</p> <p>17 try to gather evidence, as I said, you know, I</p> <p>18 was trying to answer the causal question; I try</p> <p>19 to gather all relevant evidence to the relevant</p> <p>20 causal question at hand.</p> <p>21 And sometimes these are unpublished</p> <p>22 documents, and sometimes these are regulatory</p> <p>23 documents and sometimes, as is in this case, they</p> <p>24 are depositions. And this approach is quite</p> <p>25 consistent with other -- other approaches, such</p>

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<p>1 as those conducted by, you know, Health Canada. 2 I mean, they clearly state that, you know, 3 you gather all relevant available evidence. 4 Q. That was your goal; is that right? 5 A. Yes. 6 Q. Did Health Canada review deposition 7 testimony of company witnesses, to your 8 knowledge? 9 A. Well, they were not available to them. 10 Q. When you practice, outside of being a 11 litigation consultant, do you rely on excerpts of 12 deposition testimony? 13 A. Well, again, you know, outside of this, 14 when I do papers -- I mean, I do include 15 unpublished or whatever you can collect, 16 whether -- whether it's excerpts of -- I mean, I 17 haven't -- if I look at my past papers, I can't 18 say that I've used excerpts of deposition 19 transcripts. 20 Q. Did -- strike that. 21 You also cite company documents in your list 22 of references; is that right? 23 A. Which one is that? 24 Q. Exhibit 4. 25 A. Which company?</p>	<p>1 as humanly possible. 2 Q. My question is a little more specific. 3 I'm talking now just about any documents produced 4 by Johnson & Johnson defendants or any documents 5 produced by Imerys defendants. 6 You do cite to several of those in your 7 reference list; correct? 8 A. Yes. 9 Q. You were provided those documents by 10 counsel for plaintiffs; correct? 11 A. Yes. 12 Q. Were you provided a large set of 13 materials, company documents from the J&J 14 defendants and from the Imerys defendants, or 15 were you provided with select documents? 16 MS. PARFITT: Objection. Form. 17 A. I mean, these are company documents. I 18 mean, what is the difference between the two? 19 Like explain to me by example. 20 Q. Were you provided a box of J&J 21 documents or documents produced by J&J for your 22 review by plaintiffs' counsel? 23 MS. PARFITT: Objection. Form. 24 A. I don't know. I mean, they provided 25 documents. I see them as documents. I don't see</p>
<p>1 Q. Well, for example, Item 116 refers to 2 an Imerys document, item 63 refers to a document 3 or set of documents produced by the 4 Johnson & Johnson defendants; correct? 5 A. What was the second one? I'm sorry. 6 You said 116 and then? 7 Q. Yes. Sixty -- 8 MS. PARFITT: 63. 9 Q. 63. 10 A. I'll have to go back and see what do 11 they cite about, to refresh my memory. 12 Q. As you sit here, you don't remember 13 what those documents are, do you? 14 A. Yeah. Yeah. I'd have to go back. 15 Q. Is that correct? 16 A. Yeah. I mean, I have to go back to my 17 report and see them. 18 Q. My question is: Did plaintiffs' 19 counsel provide you with a large set of J&J 20 and Imerys company documents and you went through 21 and whittled them down, or did they provide you 22 with select documents? 23 MS. PARFITT: Objection. Form. 24 A. Well, I mean, I feel it's a large set. 25 As you can see, I've reviewed, you know, as much</p>	<p>1 a difference between. You can -- you know, you 2 can make that connection. 3 Q. Let me do it this way. 4 A. Sure. 5 Q. Are the documents that you reviewed 6 relating to those produced by J&J or produced by 7 Imerys, do you list those in your references, 8 Exhibit 4, and your additional materials and data 9 considered, Exhibit 5? 10 A. They are listed. Yes. 11 Q. All right. When you are doing your day 12 job, outside of your litigation consulting work, 13 do you rely on internal company documents? 14 MS. PARFITT: Objection. Form. 15 A. I mean, I have relied on company 16 documents. When you say "internal company 17 documents," that's, you know -- yeah. I have 18 relied on company documents. We have relied on 19 company trial registries for publications. We 20 have relied on -- whether you're talking about 21 company communication, that's different. 22 But in terms of if we have data available 23 from the company, there's no reason not to rely 24 on that. 25 Q. I'm talking about company</p>

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<p>1 communications, the types of documents that you 2 cite from or produced by J&J and by Imerys in 3 your reference list. 4 Those are not the types of materials that 5 you typically would rely on if you were doing a 6 study for publication; correct? 7 MS. PARFITT: Objection. Form. 8 A. And, again, I've just said that, you 9 know, I gathered all the relevant evidence, as 10 would -- you know, as a methodology that's 11 acceptable and considered. 12 But, you know, in my previous reviews, I've 13 not had access to -- access to those documents. 14 And that's the only -- that's the only place 15 where you can get access to these documents. 16 Q. The answer to my question is no, you 17 know, when you publish articles, you do not rely 18 on internal company documents or communications 19 as you are in this litigation matter; correct? 20 MS. PARFITT: Objection. Form. 21 A. The reason is because there's a 22 confidentiality order. And so you can't say you 23 can't publish articles when you can't access 24 them. I mean, there's a chicken and egg, here, 25 right?</p>	<p>1 testimony. 2 A. I've already stated that when I publish 3 articles, the approach is to gather all relevant, 4 available evidence. 5 And I have, in fact -- you can go back at my 6 articles -- and included data from company 7 documents in various systematic reviews and 8 meta-analyses. So this idea that I have not 9 relied on company documents is -- you know, is 10 not. 11 The question is about deposition transcripts 12 and communique. Those are generally not 13 available in the published domain, and even for 14 this particular instance, you know, for there's a 15 confidentiality order. I'm just trying to 16 explain what happens. 17 Q. So that our record is clear, when you 18 talk about internal communique, we're talking 19 about internal communications, in this case, 20 materials that you have been provided by 21 plaintiffs that have been produced by J&J and by 22 Imerys. 23 Those are not the types of documents that 24 you typically have available and rely upon in 25 your published work; correct?</p>
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<p>1 Q. Understood. 2 The answer, though, to my question is yes; 3 correct? 4 MS. PARFITT: Objection. Form. 5 A. The reason is because these 6 documents -- 7 Q. Doctor, you need to answer the 8 question. 9 MS. PARFITT: Wait, Mr. Zellers. 10 Excuse me. Let the witness answer the question. 11 MR. ZELLERS: I'm asking him to answer 12 the question and then I'll be happy to move on. 13 MS. PARFITT: No. You're telling him, 14 say yes. He's trying to answer your question. 15 Ask him again. He'll answer the 16 question. He's done it twice. 17 Q. Do you need me to repeat the question? 18 A. Yes, please. 19 MR. ZELLERS: Could you read the 20 question? 21 I'll ask it again. 22 Q. Dr. Singh, when you publish articles, 23 you do not rely on internal company documents; 24 correct? 25 MS. PARFITT: Objection. Misstates his</p>	<p>1 MS. PARFITT: Objection. Misstates his 2 testimony. 3 Q. Is that correct, Doctor? 4 MS. PARFITT: Objection. Misstates his 5 testimony. 6 A. These are just not available to form an 7 opinion in the published domain. 8 Q. You have an additional -- 9 THE WITNESS: Can I take a break? 10 MR. ZELLERS: Sure. Of course. At any 11 time. 12 THE WITNESS: Sorry about that. 13 MR. ZELLERS: No. That's fine. 14 THE VIDEOGRAPHER: Off the record. 15 10:22 a.m. 16 (A recess was taken.) 17 THE VIDEOGRAPHER: Here begins media 18 No. 2 in today's deposition of Sonal Singh, M.D., 19 M.P.H. Back on the record, 10:35 a.m. 20 BY MR. ZELLERS: 21 Q. Dr. Singh, are you ready to continue? 22 A. Yes, I am. 23 Q. When we broke, we were looking at the 24 additional materials and data considered list, 25 which we have marked as Deposition Exhibit 5.</p>

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<p>1 Do you have that?</p> <p>2 A. Yes.</p> <p>3 Q. There are some documents on this list</p> <p>4 that have a preface of Imerys. And if you look</p> <p>5 on Page 87, you list those documents out. And</p> <p>6 then turning to Page 88, there's a series of</p> <p>7 documents that begin with J&J.</p> <p>8 Do you see those?</p> <p>9 A. Yes.</p> <p>10 Q. Did you rely on those documents in</p> <p>11 informing your opinions?</p> <p>12 A. No. I mean, I reviewed -- I don't know</p> <p>13 if I reviewed them in full. I just -- you know,</p> <p>14 they were provided to me.</p> <p>15 Q. That is, the set of documents that were</p> <p>16 provided to you by counsel for plaintiffs; is</p> <p>17 that right?</p> <p>18 A. Yes.</p> <p>19 Q. Are you able, as we sit here, to tell</p> <p>20 me what those documents are?</p> <p>21 A. Yeah. I mean, for example, some of</p> <p>22 them is, you know, duplicative of expert reports</p> <p>23 that are listed here. I don't know by number and</p> <p>24 number, J&J, what that means.</p> <p>25 Q. I'm referring to, for this series of</p>	<p>1 answer the causal question in this case; is that</p> <p>2 right?</p> <p>3 A. Yes.</p> <p>4 MS. PARFITT: Objection.</p> <p>5 Q. You did not have access to internal</p> <p>6 documents of J&J companies or of Imerys; is that</p> <p>7 right?</p> <p>8 A. Yes.</p> <p>9 Q. You asked for those documents, the ones</p> <p>10 that would be relevant to you in forming an</p> <p>11 answer to the question you were asked of</p> <p>12 plaintiffs' counsel; correct?</p> <p>13 A. Yeah. Relevant to consider or support</p> <p>14 or refute. Yeah.</p> <p>15 Q. The documents that were provided to you</p> <p>16 are the documents that appear with a J&J</p> <p>17 preface -- preface and an Imerys preface in the</p> <p>18 reference list, Exhibit 4, and in the additional</p> <p>19 materials and data considered list, Exhibit 5;</p> <p>20 correct?</p> <p>21 A. Yes.</p> <p>22 Q. Once you got those documents and you</p> <p>23 looked at those documents -- and you're not sure</p> <p>24 you looked at all of them; is that right?</p> <p>25 A. Yes. I did not. I mean --</p>
<p style="text-align: center;">Page 79</p> <p>1 questions, just to the other materials that you</p> <p>2 have listed, the ones that begin with Imerys. So</p> <p>3 starting at Item 2 on Page 87. And then also</p> <p>4 including the documents that begin J&J that go</p> <p>5 through Item 23 on Page 88.</p> <p>6 Are you able to identify and tell us what</p> <p>7 those documents are?</p> <p>8 A. I mean, I was provided them. I don't</p> <p>9 know what specifically they are, you know.</p> <p>10 Q. Do you know how they were compiled?</p> <p>11 A. No. I'm not aware of the process.</p> <p>12 Q. Do you know what percentage of internal</p> <p>13 documents, internal to Johnson & Johnson</p> <p>14 companies and to Imerys, have been produced in</p> <p>15 the case that appear on your reliance list?</p> <p>16 A. I'm not aware of that proportion.</p> <p>17 Q. Did you request any additional J&J or</p> <p>18 Imerys documents other than the ones that were</p> <p>19 provided to you by plaintiffs' counsel?</p> <p>20 A. So, it's hard to say request</p> <p>21 additional. I requested question -- materials to</p> <p>22 answer my question. How would I know what</p> <p>23 additional -- you know, I requested materials.</p> <p>24 Q. The way it worked is you asked</p> <p>25 plaintiffs for materials that would be helpful to</p>	<p style="text-align: center;">Page 81</p> <p>1 Q. All right.</p> <p>2 A. -- because it is not possible to look</p> <p>3 at all of them.</p> <p>4 Q. Did you make any follow-up request for</p> <p>5 additional company documents, either documents</p> <p>6 produced by J&J or documents produced by Imerys,</p> <p>7 of plaintiffs' counsel?</p> <p>8 A. I was inundated with these, and I don't</p> <p>9 think it was practical of me to request for</p> <p>10 additional documents.</p> <p>11 Q. In terms of internal company documents</p> <p>12 and communications produced either by</p> <p>13 Johnson & Johnson and by Imerys, the only</p> <p>14 documents you reviewed are the ones that were</p> <p>15 hand selected by lawyers for plaintiffs; is that</p> <p>16 right?</p> <p>17 MS. PARFITT: Objection. Form.</p> <p>18 A. The documents that I reviewed are</p> <p>19 listed, you know, in 4 and 5.</p> <p>20 Q. My question --</p> <p>21 A. I don't know what -- so you're asking</p> <p>22 me to infer what they hand selected; right? I</p> <p>23 mean, whether they provided all, whether they</p> <p>24 provided hand selected, that's not my -- I don't</p> <p>25 know that. You know that. But I don't.</p>

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<p>1 So how can I answer that they were hand 2 selected?</p> <p>3 Q. The company documents that you 4 reviewed, internal company documents, they came 5 from plaintiffs; is that correct?</p> <p>6 A. Yes.</p> <p>7 Q. The updated materials list, we marked 8 that as Exhibit 6.</p> <p>9 Those are materials that were provided to 10 you by plaintiffs' counsel; is that right?</p> <p>11 A. No. I submitted -- I mean, I had 12 access to several of these documents, you know, 13 after the submission of my report, and I reviewed 14 them and I actually sent them some of them. 15 So...</p> <p>16 Q. What documents on this list did you 17 provide to plaintiffs and what documents on this 18 list -- we're looking at Exhibit 6 -- did they 19 provide to you?</p> <p>20 A. Like I had the Fadak article. I had 21 the Health Canada Assessment. They provided the 22 submitted reports. I had the Weed article. They 23 provided the Zervo -- I don't know how to 24 pronounce that name. Yeah.</p> <p>25 So, yeah, I had access to some of these, and</p>	<p>1 Q. It's fair to say you did not rely on 2 the updated materials list in forming your 3 opinions and preparing your report in this case; 4 correct?</p> <p>5 A. Yeah. I did not rely on this, on these 6 materials in preparing the report, but several of 7 these materials are, you know, are helpful in 8 explaining my opinions on this, which were, you 9 know, provided in the report.</p> <p>10 Q. Have you published anywhere your theory 11 that baby powder causes ovarian cancer?</p> <p>12 A. I don't consider it my theory. I mean, 13 several other people have studied this. I don't 14 know how many studies. There have been more than 15 30 studies.</p> <p>16 So I don't consider it my theory. But, no, 17 I have not published a study on it.</p> <p>18 Q. Do you plan to publish on this?</p> <p>19 A. Yes, I do.</p> <p>20 Q. Are those plans underway?</p> <p>21 A. Well, I mean, a lot of it will, again, 22 depend on, you know, the questions you asked 23 about how much of this material will become 24 eventually -- you know, I have signed a 25 confidentiality order. So, you know, how much is</p>
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<p>1 I provided the up-to-date article, and the 2 remainder, they provided.</p> <p>3 MR. KLATT: May I interject? I didn't 4 understand the very first article you said. It 5 sounded like dark.</p> <p>6 THE WITNESS: Fadak.</p> <p>7 MS. PARFITT: F-A-D-A-K.</p> <p>8 THE WITNESS: Fadak, that's a paper --</p> <p>9 MR. KLATT: Okay. I see. Thank you.</p> <p>10 THE WITNESS: That's a 2015 paper.</p> <p>11 MR. KLATT: I saw it. Thank you.</p> <p>12 BY MR. ZELLERS:</p> <p>13 Q. When did you review the materials that 14 are listed on the updated materials list, 15 Exhibit 6?</p> <p>16 A. So, again, maybe we circle back earlier 17 when I said I did not review all of them, like I 18 did not review the expert reports. Yeah.</p> <p>19 Q. Of the materials that you did review, 20 on the updated materials list, when did you 21 review those?</p> <p>22 A. Sometime between December and January.</p> <p>23 Q. It was after you had prepared your 24 written report and produced it; is that right?</p> <p>25 A. Yes.</p>	<p>1 allowed to be published.</p> <p>2 And so, you know, a lot of it will depend 3 on, I guess, the permission of the judge, who 4 allows -- who oversees these kind of -- I would 5 like to, eventually.</p> <p>6 Q. Have you previously published on any 7 topic relating to talc and ovarian cancer?</p> <p>8 A. No.</p> <p>9 Q. Have you conducted any test or 10 experiments to confirm your theory that talc 11 migrates to the ovaries and causes cancer via 12 inflammation?</p> <p>13 A. So, again, that is not a theory that I 14 have propounded, that talc migrates through the 15 ovary, that talc migrates up to cause ovarian 16 cancer, that I have evaluated the epidemiologic 17 studies, which show a causal link between talc 18 and ovarian cancer, and several other 19 investigators, some of them which I cite, have 20 provided evidence that -- of talc-induced, you 21 know, migration.</p> <p>22 So it's not my theory, as you say.</p> <p>23 MR. ZELLERS: Move to strike as 24 nonresponsive. Try to listen.</p> <p>25 Q. My question is, I think, a simple</p>

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<p>1 question. 2 Have you, Dr. Singh, conducted any test or 3 experiments to confirm your statement in your 4 report that talc migrates to the ovaries and 5 causes cancer via inflammation? 6 A. No. I have not done any experiments. 7 Q. Can you identify for me a single 8 article that identifies inflammation anywhere in 9 a woman's reproductive tract resulting from 10 external genital talc application? 11 MS. PARFITT: Objection. Form. 12 A. Can you repeat the question? 13 Q. Sure. Can you identify for me a single 14 article that identifies inflammation anywhere in 15 a woman's reproductive tract resulting from 16 external genital talc application? 17 A. I mean, again, this is, you know, when 18 I reviewed -- so this relates to the biological 19 question about talc. And when I reviewed the 20 biological evidence, I was on migration and 21 inflammation, I was looking for evidence, support 22 or refute that. 23 And there's studies that show that talc 24 migrates through HS, you know, whatever, 25 hysterosalpingography, and induces inflammation.</p>	<p>1 A. Yeah. It was available to everyone in 2 December. 3 Q. Have you looked into what other public 4 health authorities have to say about talc and 5 ovarian cancer? 6 A. Yes. 7 Q. Would it be important for you to know 8 that CDC does not list talc as a risk factor for 9 ovarian cancer? 10 MS. PARFITT: Objection. Form. 11 A. I mean, it would be important to know, 12 you know, various agencies, you know, CDC, 13 whatever. I mean, you would like to know of 14 many, many agencies. 15 But, again, you'd have to -- you'd have to 16 see the quality of their judgment. I mean, what 17 is their rationale? What are the studies they 18 reviewed? What is the data available? 19 Just like as you said, what is the data 20 available to me to make that judgment, what is 21 data available to them? Just because they are 22 the CDC doesn't mean that, you know -- yes, I 23 would like to know their opinion, but then what 24 is the underlying basis of their opinion? 25 Q. You're familiar with the CDC; correct?</p>
<p>1 I mean, the definitive study is not there. 2 And, again, I did not do these studies. So 3 I can only rely on people who have done such 4 studies. 5 Q. Can you cite a single study, animal or 6 human, that traces externally applied talc up 7 through the reproductive tract to the ovaries? 8 MS. PARFITT: Objection. Form. 9 A. Again, but I do not believe that's 10 necessary to, you know, provide my causal opinion 11 in support of a causal hypothesis. 12 MR. KLATT: Objection. Nonresponsive. 13 Q. Is the answer to my question, no? 14 MS. PARFITT: Objection. Form. 15 A. No, with context. 16 Q. Health Canada Risk Assessment, that was 17 not something that you included in your 18 references or materials considered as part of 19 your report; is that right? 20 A. Yes. It was not available at that 21 time. 22 Q. All right. It is listed, the Health 23 Canada Risk Assessment is listed in your updated 24 materials list that we got over the weekend; 25 correct?</p>	<p>1 A. I'm very familiar with the CDC. 2 Q. It is an unbiased governmental entity; 3 correct? 4 A. Well, it would depend on the opinion. 5 I mean, you know, we cannot say an entity is 6 unbiased. It would depend what is the particular 7 opinion -- you know, if the CDC provides 8 vaccination. We have to look at the particular 9 context. 10 Q. Are you aware that the CDC does not 11 list talc as a risk factor for ovarian cancer? 12 A. Yes. 13 MS. PARFITT: Objection. 14 Q. Are you aware that the Mayo Clinic does 15 not list talc as a risk factor for ovarian 16 cancer? 17 A. I'm not aware of Mayo Clinic. 18 Q. You are aware of NIH; correct? 19 A. Yes. I'm funded by the NIH. 20 Q. Do you know that NIH does not list talc 21 as a risk factor for ovarian cancer? 22 A. Yes. And I have been aware of, you 23 know, changes in the past to their -- to their 24 statements. 25 (Article entitled "Ovarian,</p>

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1	Fallopian Tube, and Primary Peritoneal	1 not a risk factor for ovarian cancer?
2	Cancer Prevention (PDQ) - Health	2 MS. PARFITT: Objection.
3	Professional Version marked Exhibit 15.)	3 A. So the National Cancer Institute hasn't
4	MR. ZELLERS: Take a look at Deposition	4 opined on that talc is not a causal -- you know,
5	Exhibit 15.	5 is causally linked to ovarian cancer. It has
6	MS. PARFITT: Thank you.	6 provided a listing of documents. It has not gone
7	BY MR. ZELLERS:	7 through any systematic process, that I'm aware
8	Q. Deposition Exhibit 15 is a publication	8 of, of looking at the epidemiologic data
9	from the National Cancer Institute; is that	9 systematically.
10	right?	10 It has not provided any evidence of
11	A. It is.	11 inflammation or lack thereof or migration or lack
12	Q. National Cancer Institute is a leading	12 thereof or to even, you know, arrive at this
13	health authority; is that right?	13 causal hypothesis.
14	A. Yes.	14 Q. Because it's important to look at both
15	Q. It's a leading cancer research	15 sides of an issue; correct?
16	institution in the world?	16 A. Yes. I did look -- so I'm saying that
17	MS. PARFITT: Objection. Form.	17 I did look at this and my opinion --
18	A. Yes.	18 Q. Did you --
19	Q. Have you ever received a grant from the	19 MS. PARFITT: Please let him finish.
20	National Cancer Institute?	20 Q. Are you finished?
21	A. I've applied. I have not received any.	21 A. I'm saying I did look at this, and I'm
22	I am applying again.	22 aware of this document.
23	Q. They fund more cancer research than any	23 Q. Did you cite to the CDC in your report
24	organization in the world; correct?	24 or references?
25	MS. PARFITT: Objection.	25 A. I don't -- I wasn't aware of the CDC.
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1	A. I don't know that particular number,	1 Q. Did you cite to the NIH in your report
2	but -- I just don't know that answer.	2 or your references?
3	Q. Are you aware that the National Cancer	3 A. I should have. And if it isn't, it is
4	Institute reviews the peer-reviewed literature as	4 remiss.
5	it relates to risk factors for ovarian cancer?	5 Q. Did you cite to the National Cancer
6	MS. PARFITT: Objection. Form.	6 Institute in your report or references?
7	A. Yes. And I don't know how updated they	7 A. I have to look at it.
8	are. Based on the document you've provided me,	8 Q. The National Cancer Institute, in fact,
9	they have four citations for perineal talc and	9 has done an analysis, a very detailed analysis
10	ovarian cancer.	10 which we have marked as Exhibit 15 to this
11	So, again, I'm not questioning the NCI's	11 deposition; correct?
12	motivation, but I am -- I am raising, what is the	12 MS. PARFITT: Objection to form.
13	quality of their judgment.	13 A. I don't think it's a detailed analysis
14	Q. Did you consider the CDC's	14 of perineal talc and ovarian cancer.
15	determination that talc is not a risk factor for	15 There is how many lines? We can look at it
16	ovarian cancer in formulating your opinions?	16 and read it together. It's, you know -- it's 15
17	A. Yes.	17 lines. And they have references 41 to 45, which
18	Q. Did you consider NIH's determination	18 is five references.
19	that talc is not a risk factor for ovarian cancer	19 So I don't know it is a detailed analysis.
20	in formulating your opinions?	20 Q. National Cancer Institute, one of the
21	A. Yes. Because they did not have	21 things that it does is to review peer-reviewed
22	sufficient information, based on what they	22 literature as it relates to risk factors for
23	provided in their PDQs.	23 ovarian cancer. Is that right?
24	Q. Did you consider National Cancer	24 MS. PARFITT: Objection. Form.
25	Institute's opinion or conclusion that talc is	25 A. It does do that.

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<p>1 Q. All right. This document, this 2 document that we're looking at from the National 3 Cancer Institute, Exhibit 15, was updated in 4 January of 2019; is that right?</p> <p>5 A. Yeah. But it doesn't mean the review 6 was updated, because it has no recent citations 7 of studies that have been conducted.</p> <p>8 Q. We --</p> <p>9 A. We should look at the citation. Let's 10 look at it, because we are discussing this 11 document, so we should look at it in detail.</p> <p>12 Q. Doctor, turn to Page 6.</p> <p>13 A. No. Let me finish. I'm not finished 14 with this document.</p> <p>15 MS. PARFITT: Go ahead. Let him 16 finish.</p> <p>17 Q. Doctor, you have to answer my 18 questions.</p> <p>19 A. But I haven't answered it.</p> <p>20 Q. My question is look at Page 6. Can you 21 do that?</p> <p>22 A. Okay.</p> <p>23 Q. All right. Page 6 is a section on 24 perineal talc exposure; is that right?</p> <p>25 A. Yes.</p>	<p>1 A. I don't know if it's the conclusion, 2 but, yes, you read that part of the statement 3 correctly.</p> <p>4 Q. Why would you rely on Health Canada, 5 but not these other public health organizations?</p> <p>6 MS. PARFITT: Objection. Misstates his 7 testimony.</p> <p>8 A. In fact, I did rely on the Health 9 Canada when my report was conducted. So you 10 see -- I relied on the quality of the review and 11 the breadth of my review, which had hundreds of 12 studies, the breadth of review of biological 13 plausibility, the breadth of review of, you know, 14 animal studies, applying the Bradford Hill 15 framework, and then forming an opinion.</p> <p>16 Q. How -- are you done?</p> <p>17 A. No. I'm not done.</p> <p>18 And the Health Canada Assessment came after 19 that. And it so happened their methodology -- 20 methodology -- methodology and opinions are 21 consistent with mine.</p> <p>22 So it's not that I'm relying on that. I'm 23 just saying that they are consistent and they 24 came to the same conclusions.</p> <p>25 Q. What materials and analysis was done by</p>
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<p>1 Q. This is part of the National Cancer 2 Institute's publication on ovarian, fallopian 3 tube and primary peritoneal cancer prevention; is 4 that right?</p> <p>5 A. Yes.</p> <p>6 Q. On Page 6, the first sentence under 7 perineal talc exposure states, "The weight of 8 evidence does not support an association between 9 perineal talc exposure and an increased risk of 10 ovarian cancer."</p> <p>11 Is that right?</p> <p>12 A. Based on what? Based on these 41 to 45 13 citations? Which are an incomplete listing of 14 studies and an incomplete review of the evidence.</p> <p>15 So I'm just stating that, yes, what is the 16 underlying basis?</p> <p>17 Q. Doctor --</p> <p>18 MS. PARFITT: Wait. Let him finish.</p> <p>19 He's in the middle of a sentence.</p> <p>20 A. What is the underlying basis of this 21 opinion?</p> <p>22 Q. Dr. Singh, my question is: Did I read 23 the conclusion of the National Cancer Institute 24 correctly?</p> <p>25 MS. PARFITT: Objection.</p>	<p>1 the CDC in determining that talc is not a risk 2 factor for ovarian cancer?</p> <p>3 MS. PARFITT: Objection. Form.</p> <p>4 A. I don't have that.</p> <p>5 Q. What materials were reviewed and relied 6 upon by NIH in determining that talc is not a 7 risk factor for ovarian cancer?</p> <p>8 A. References 41 to 45.</p> <p>9 Q. How do you know that that's all that 10 the NIH and National Cancer Institute reviewed?</p> <p>11 A. Because that's what they cite.</p> <p>12 Q. Have you been privy to the complete 13 review and analysis of the National Cancer 14 Institute?</p> <p>15 A. But you just stated that this was the 16 complete review and analysis of the National 17 Cancer Institute?</p> <p>18 Q. I'm asking you: Do you know what 19 specific studies and materials were reviewed and 20 what analysis was done by NIH and by the National 21 Cancer Institute?</p> <p>22 A. Yeah. These are the studies that were 23 reviewed.</p> <p>24 Q. You are assuming that this is the 25 entire analysis and review that was done by the</p>

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<p>1 National Cancer Institute; is that right?</p> <p>2 MS. PARFITT: Objection. Form.</p> <p>3 A. I'm not assuming anything. I'm</p> <p>4 assuming that, just as the conclusions that you</p> <p>5 are assuming are definitive, I'm also, you know,</p> <p>6 stating that these are the studies that they</p> <p>7 relied on to form those conclusions.</p> <p>8 So we can't pick and choose, assess</p> <p>9 statement of the excerpt that you -- supports</p> <p>10 your opinion, but then not look at the underlying</p> <p>11 evidence base that supports that opinion.</p> <p>12 Q. But we should consider all of that</p> <p>13 information; correct?</p> <p>14 A. Yeah. And the studies underlying.</p> <p>15 Q. And you did not consider the CDC's</p> <p>16 opinion in your report, did you?</p> <p>17 A. I mean, CDC -- so let's just step back</p> <p>18 a little.</p> <p>19 When I say CDC opinion, I mean, I'm looking</p> <p>20 at original studies. I'm looking at data in</p> <p>21 forming my opinion. I did look at what IARC</p> <p>22 considered and other agencies considered.</p> <p>23 My opinion is based on my review and the</p> <p>24 methodology and I was, you know, obviously,</p> <p>25 taking into account what agencies say, but</p>	<p>1 assessment prior to its publication?</p> <p>2 A. No.</p> <p>3 Q. Have you submitted any comments to</p> <p>4 Health Canada?</p> <p>5 A. No.</p> <p>6 Q. Do you intend to submit any comments to</p> <p>7 Health Canada?</p> <p>8 A. I don't know. I mean, it will depend</p> <p>9 on the timeline and I don't know what their</p> <p>10 timeline is and what my -- you know, I</p> <p>11 haven't -- I haven't thought about it.</p> <p>12 Q. Outside of your litigation consulting,</p> <p>13 do you generally rely on draft assessments by</p> <p>14 regulatory agencies?</p> <p>15 MS. PARFITT: Objection. Form.</p> <p>16 A. Yes. I mean, you know, we look at</p> <p>17 draft assessments on regulatory. There's no</p> <p>18 reason not to.</p> <p>19 Q. Have you ever cited a draft assessment</p> <p>20 by a regulatory agency in any study that you've</p> <p>21 published?</p> <p>22 A. Oh, I've published 200 papers, and I</p> <p>23 can't recall, you know, which one, but I know</p> <p>24 that I have looked at draft assessments by the</p> <p>25 FDA.</p>
<p style="text-align: center;">Page 99</p> <p>1 agencies' opinion is not necessarily the</p> <p>2 underlying basis of my causal opinion.</p> <p>3 Q. Whether it's CDC, NIH, NCI or Health</p> <p>4 Canada; correct?</p> <p>5 A. Yeah. I mean, they're informing. I</p> <p>6 want to look at their thinking and what is the</p> <p>7 quality of their judgment on this.</p> <p>8 Q. You understand Health Canada has simply</p> <p>9 produced a draft assessment; is that right?</p> <p>10 MS. PARFITT: Objection. Form.</p> <p>11 A. Yes.</p> <p>12 Q. We are at the beginning of the public</p> <p>13 comment period; is that right?</p> <p>14 A. I don't know the timeline of that.</p> <p>15 Q. Are you aware that Health Canada can</p> <p>16 take up to two years to take any action or no</p> <p>17 action at all?</p> <p>18 A. Well, I mean, I was not asked a causal</p> <p>19 question on what to do about this. I was just</p> <p>20 asked a question on causality. And I'm not sort</p> <p>21 of -- I'm not privy to their process.</p> <p>22 Q. How did you come to learn of the Health</p> <p>23 Canada Risk Assessment?</p> <p>24 A. News, news documents.</p> <p>25 Q. Were you involved in the risk</p>	<p style="text-align: center;">Page 101</p> <p>1 Q. Have you cited any?</p> <p>2 A. I can't recall and tell you that. It's</p> <p>3 just something I can't recall.</p> <p>4 Q. Are you familiar with the precautionary</p> <p>5 principle?</p> <p>6 A. Yes.</p> <p>7 Q. What is the precautionary principle?</p> <p>8 A. It is to, you know, apply, as my</p> <p>9 understanding, is to warn when there is, you</p> <p>10 know, evidence of a hazard.</p> <p>11 Q. That's your understanding of the</p> <p>12 precautionary principle?</p> <p>13 A. Yeah.</p> <p>14 Q. Do you understand that, as defined by</p> <p>15 Health Canada, a precautionary principle means</p> <p>16 taking a precautionary approach to</p> <p>17 decision-making that emphasizes the need to take</p> <p>18 timely preventative action even in the absence of</p> <p>19 a full scientific demonstration of cause and</p> <p>20 effect?</p> <p>21 A. If you're stating -- well, let's get</p> <p>22 the document out before we --</p> <p>23 Q. Sure. Take a look at deposition</p> <p>24 Exhibit 16.</p> <p>25 (Document entitled "Health</p>

26 (Pages 98 to 101)

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<p>1 Canada Decision-Making Framework for 2 Identifying, Assessing, and Managing Health 3 Risks - August 1, 2000" marked Exhibit 16.) 4 A. Okay. Can you point out which page? 5 Q. Sure. Take a look at Pages 8 and 9. 6 So we identify it for the record, Exhibit 16 is 7 the Health Canada Decision-Making Framework for 8 Identifying, Assessing and Managing Health Risk; 9 is that right? 10 A. Yes. 11 Q. If you go to Page 8 and 9, Section 1.3 12 are the underlying principles for Health Canada; 13 is that right? 14 MS. PARFITT: Objection. 15 MR. TISI: You're looking at the wrong 16 document. You're not looking at the draft 17 assessment. You're looking at the -- 18 MR. ZELLERS: Counsel, I am -- 19 MR. TISI: But you identified something 20 as something different than what it is. 21 MR. ZELLERS: I identified the document 22 as Health Canada Decision-Making Framework for 23 Identifying, Assessing and Managing Health Risk. 24 I'm reading the title of the document. 25 MR. TISI: Okay. I have it wrong. Go</p>	<p>1 precautionary approach. A key feature of 2 managing health risk is that decisions are often 3 made in the presence of considerable scientific 4 uncertainty. A precautionary approach to 5 decision-making emphasizes the need to take 6 timely and appropriately preventative action, 7 even in the absence of a full scientific 8 demonstration of cause and effect." 9 Did I read that correctly? 10 A. Okay. 11 Q. Do you agree that the recommendation by 12 Health Canada does not require a finding of 13 causation like is required in a court; correct? 14 MS. PARFITT: Objection. Form. 15 A. But I mean, that's what they conclude, 16 that there is a cause. We can look at the Health 17 Canada document. 18 Q. Is a guiding principle of the Health 19 Canada Decision-Making and Assessment to use a 20 precautionary approach? 21 MS. PARFITT: Objection. Form. 22 A. Well, no. I mean, precautionary -- 23 they are just defining a precautionary approach. 24 But when they assess talc for its whatever, you 25 know, the talcum powder products, their</p>
<p>1 ahead. 2 MR. ZELLERS: That's okay. 3 A. Wherever we are. 4 Q. No problem, Doctor. 5 MS. PARFITT: We'll orient ourselves. 6 Q. Are we oriented? 7 A. Yeah. I know the document. But the 8 page number. 9 Q. Look at Pages 8 and 9. 10 A. Okay. 11 Q. 1.3 are the underlying principles for 12 Health Canada decision-making. 13 Do you see that? 14 A. Yes. 15 Q. They list out a number of underlying 16 principles on Pages 8 and 9. 17 One of those is to use a precautionary 18 approach; is that right? 19 A. Yes. 20 Q. If you then turn to Page 11, at the 21 bottom, they define use of a precautionary 22 approach; is that right? 23 A. Yes. 24 Q. Health Canada states in this document, 25 which we've marked as Exhibit 16, "Use a</p>	<p>1 particular assessment clearly states it's causal. 2 And we should open that document. We should not 3 talk about it in hypotheticals. 4 Q. On what basis are you relying to state 5 that Health Canada did not use a precautionary 6 approach in assessing talcum powder? 7 MS. PARFITT: Objection. Form. 8 A. No. No. No. Let me answer that 9 question. 10 You were asking about decision-making. 11 Decision-making would be removal of talc, removal 12 of that. 13 But there's two parts to that question about 14 cause and effect. So let's bring the document 15 out and say where they state there is a causal 16 relationship. 17 Why aren't you bringing that document out? 18 I mean, you can't talk about documents without 19 documents. 20 Q. Dr. Singh -- 21 A. Yeah. 22 Q. -- do you have any basis to state 23 that, in evaluating talcum powder, Health Canada 24 did not follow its underlying principle of using 25 a precautionary approach?</p>

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<p>1 MS. PARFITT: Objection. Form. 2 Misstates the evidence. 3 A. Yeah. But that does not preclude at 4 arriving at a causal opinion. Just because you 5 have a precautionary approach, you can still 6 arrive at causal opinion, which they did. 7 So this is -- this principle is not 8 inconsistent with their report on a causal 9 opinion. 10 Q. The standard under a precautionary 11 approach is that decisions can be made even in 12 the absence of a full scientific demonstration of 13 cause and effect; correct? 14 MS. PARFITT: Objection. Form. 15 A. That is a threshold, but that does not 16 preclude the determination of cause and effect, 17 which has been done already. 18 Q. Are you familiar with the Taher 2018 19 publication? 20 A. Taher. I don't know which one. 21 Q. T-A-H-E-R. 22 A. Yes. 23 Q. Are you familiar with that publication? 24 A. Yeah. It was cited in the Health 25 Canada document.</p>	<p>1 A. No. 2 Q. Hold on. Stop. Stop. 3 A. Sure. 4 Q. Just so we're clear, the updated 5 materials list is a list that was created by 6 plaintiffs' counsel; correct? 7 MS. PARFITT: It was based upon 8 materials that we had either sent or we had sent 9 that he also had; correct. 10 MR. ZELLERS: This Exhibit 6 is a list 11 of materials that were provided by plaintiffs' 12 counsel to Dr. Singh, understanding that 13 Dr. Singh has testified that he independently had 14 access to some of the materials. 15 MS. PARFITT: Correct. Including 16 Taher. 17 THE WITNESS: Yeah. And some of them, 18 I added, such as some of the published articles 19 and Health Canada. 20 BY MR. ZELLERS: 21 Q. You have read the Taher 2018 22 manuscript; is that right? 23 A. I mean, I read the -- yeah, I mean, 24 primarily, I read their assessment in Health 25 Canada.</p>
<p>1 Q. Have you reviewed and analyzed that 2 publication? 3 A. I mean, I reviewed it. I don't know if 4 I analyzed it. 5 What do you mean by "analyzed"?</p> <p>6 Q. You have not included it on your 7 references or additional materials considered or 8 updated materials; is that right?</p> <p>9 MS. PARFITT: Objection. 10 A. It was part of the Health Canada. It 11 should have been part, because it was part, in my 12 mind, part of the Health Canada Assessment. 13 Q. Can you show me where -- 14 A. Well, I haven't. 15 Q. -- the Taher publication is listed in 16 your updated materials which we marked as 17 Exhibit 6? 18 MS. PARFITT: For the record, we 19 created this list, Mr. Zellers, and part of the 20 Canadian, just for form, and you can inquire. 21 MR. ZELLERS: That's okay. 22 MS. PARFITT: But since we did create 23 Exhibit No. 6, additional materials, we had 24 included, I will tell you, we had given him 25 Taher. He may have found it himself.</p>	<p>1 MR. ZELLERS: Deposition Exhibit -- 2 well, strike that. 3 Q. What you told me, when I asked you 4 about CDC and NIH and NCI, is you got to look at 5 the underlying documents, the underlying studies; 6 is that right? 7 A. Yes. 8 Q. One of the underlying documents and 9 studies on which Health Canada reviewed was the 10 Taher article; is that right? 11 A. Yes. 12 (Document entitled "Systematic 13 Review and Meta-Analysis of the Association 14 between Perineal Use of Talc and Risk of 15 Ovarian Cancer" marked Exhibit 17.) 16 BY MR. ZELLERS: 17 Q. The Taher article is what we have 18 marked as deposition Exhibit 17; is that right? 19 MS. PARFITT: Thank you. 20 MR. TISI: Is it Thayer or Taher? 21 A. It is Taher, T-A-H-E-R. 22 Q. Did you have access to the Taher 2018 23 article before it was published? 24 A. Yes. 25 Q. How did you have access to the Taher</p>

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<p>1 2018 article?</p> <p>2 A. Yeah. I requested access from the</p> <p>3 attorneys, if they had it. They provided it.</p> <p>4 Q. So plaintiffs' attorneys provided you</p> <p>5 with access to the article we've marked as</p> <p>6 Exhibit 17 prior to its publication; is that</p> <p>7 right?</p> <p>8 A. Yeah.</p> <p>9 MS. PARFITT: Objection.</p> <p>10 A. I don't know if it has been published</p> <p>11 yet.</p> <p>12 Q. Did you have access to the appendices</p> <p>13 or supplemental tables referenced in the Taher</p> <p>14 publication?</p> <p>15 A. Yes, I did.</p> <p>16 Q. In your epidemiologic -- strike that.</p> <p>17 Is the Taher publication, which we've marked</p> <p>18 as Exhibit 17, is that peer-reviewed?</p> <p>19 A. It's peer-reviewed, and I assume that</p> <p>20 it's going to be published. And it was reviewed</p> <p>21 by Health Canada. So I mean, it is</p> <p>22 peer-reviewed, is my understanding.</p> <p>23 It is -- I don't know the exact status of</p> <p>24 that manuscript.</p> <p>25 Q. What organization has peer-reviewed the</p>	<p>1 Q. Why did you rely on this article,</p> <p>2 Taher, Exhibit 17?</p> <p>3 MS. PARFITT: Objection to form.</p> <p>4 A. I mean, when you say I relied on, I</p> <p>5 mean, I reviewed the, again, Health Canada</p> <p>6 Assessment. So none of this is in isolation.</p> <p>7 I mean, this is just a part of, you know,</p> <p>8 the body of evidence. You know, my testimony</p> <p>9 relies on -- and my report relies on the evidence</p> <p>10 cited there.</p> <p>11 This is, you know, another meta-analysis</p> <p>12 that, you know, I reviewed the evidence in</p> <p>13 slightly different ways and came to the same</p> <p>14 conclusions and, you know, also did a causal</p> <p>15 analysis. So it's sort of, you know, you have to</p> <p>16 review what evidence comes out.</p> <p>17 If another meta-analysis comes out tomorrow,</p> <p>18 then I would review it.</p> <p>19 Q. Do you know the source of funding for</p> <p>20 this publication?</p> <p>21 A. I don't know. I mean, Health Canada or</p> <p>22 something else, I don't know that. I can't</p> <p>23 answer that question.</p> <p>24 Q. You're assuming that Health Canada is</p> <p>25 the source of funding for this publication?</p>
<p style="text-align: center;">Page 111</p> <p>1 Taher publication, Exhibit 17?</p> <p>2 A. So I don't -- yeah, again, I take it --</p> <p>3 I don't know the status of that manuscript, where</p> <p>4 it is.</p> <p>5 Q. You do not know, one way or the other,</p> <p>6 as to whether the Taher publication, Exhibit 17,</p> <p>7 has been peer-reviewed; is that right?</p> <p>8 A. Yeah. Whether it's been accepted or</p> <p>9 submitted or -- I don't know.</p> <p>10 Q. Are you finished?</p> <p>11 A. I don't know the status. I'm trying to</p> <p>12 say that.</p> <p>13 Q. In your epidemiological work, outside</p> <p>14 of litigation, do you rely on articles that have</p> <p>15 not been peer-reviewed?</p> <p>16 A. Yes. Several times, we rely on</p> <p>17 articles. Several times, we actually request</p> <p>18 articles if it's key to something that we are</p> <p>19 working on and we know that a particular</p> <p>20 investigator is active in that area and he may</p> <p>21 have.</p> <p>22 So, yes, we actually -- sometimes we request</p> <p>23 that. And the majority of the times people don't</p> <p>24 provide their work until it's published. But</p> <p>25 sometimes we get it. Yeah.</p>	<p style="text-align: center;">Page 113</p> <p>1 A. I don't know. I shouldn't answer that.</p> <p>2 Q. Do you know the credentials of the</p> <p>3 authors of the Taher 2018 publication,</p> <p>4 Exhibit 17?</p> <p>5 A. I have no idea.</p> <p>6 Q. Do you personally know any of the</p> <p>7 authors that are listed?</p> <p>8 A. No.</p> <p>9 Q. Do you know whether or not any of the</p> <p>10 authors of the Taher publication, as listed out</p> <p>11 on the first page of Exhibit 17, have conflicts</p> <p>12 of interest?</p> <p>13 MS. PARFITT: Objection.</p> <p>14 A. Not that -- I didn't -- again, I read</p> <p>15 the article. I don't know what their, you know,</p> <p>16 declarations are. Yeah.</p> <p>17 And it does say it was conducted under</p> <p>18 contract to Health Canada. So it seems like the</p> <p>19 funding source is Health Canada. And let's look</p> <p>20 at their source of funding.</p> <p>21 Q. Doctor, we'll never finish if you want</p> <p>22 to just go through and look at things.</p> <p>23 My specific question is whether or not you</p> <p>24 know whether or not any of the authors have</p> <p>25 conflicts of interest?</p>

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<p>1 MS. PARFITT: Objection. 2 A. That's a very vague and broad question. 3 I mean, conflicts of interest as it relates to 4 what? 5 Q. Do you know? 6 MS. PARFITT: Objection. Form. 7 A. As it relates to what? 8 Q. You told me you don't know any of the 9 authors; right? 10 A. Yeah. 11 Q. I've now asked you if you know if any 12 of the authors had conflicts of interest. 13 A. And I'm saying that I'm reading the 14 article and I'm reading their declaration, and 15 that's the only way to find out that they have 16 conflicts of interest, right. 17 Q. I should be more precise. 18 A. Yeah. 19 Q. Of your own personal knowledge, do you 20 know whether or not any of the authors have 21 conflicts of interest? 22 A. That's a separate -- 23 MS. PARFITT: Objection. 24 A. So what I'm trying to say is, you know, 25 when you ask about conflicts of interest, if you</p>	<p>1 sentence. And I'll read it. Have you found 2 Page 41 of Exhibit 17? 3 A. 41? 4 Q. Yes. Page 41. Do you have that? 5 A. Yeah. Yeah. 6 Q. The very last -- 7 A. Yeah. I'm looking at it. 8 Q. Tell me if I read this correctly. "The 9 similarity of findings between studies published 10 prior to and after this point suggest asbestos 11 contamination does not explain the positive 12 association between perineal use of talc powder 13 and risk of ovarian cancer." 14 Did I read that correctly? 15 A. Yes. 16 Q. Do you disagree with the authors on 17 that point? 18 A. Let me just read it. 19 Well, I mean, to the extent that they are 20 aware that asbestos does not contaminate -- talc 21 is not contaminated with asbestos, I do agree. 22 But, again, I have, you know, obviously more 23 information on that. 24 Q. On Page 25 of Exhibit 17, the Taher 25 2018 article, is a table entitled "Summary of</p>
<p style="text-align: center;">Page 115</p> <p>1 want to ask about my article, you'd have to go 2 and read the article and see that, what is stated 3 there. 4 So that's what I'm trying to answer when you 5 ask. I'm trying to be honest and truthful about 6 my answers. 7 MR. KLATT: Objection; nonresponsive. 8 MR. ZELLERS: Move to strike as 9 nonresponsive. 10 THE WITNESS: I didn't understand the 11 question. 12 MR. LOCKE: We all have questions to 13 ask this witness. We're not going to make the 14 seven hours with these answers that do not answer 15 the questions. 16 THE WITNESS: Maybe I'm not 17 understanding the question. I'm sorry. It's not 18 that I'm trying to -- 19 Q. Dr. Singh, the authors of the Taher 20 paper concluded that the evidence suggests that 21 asbestos contamination does not explain the 22 positive association between perineal use of talc 23 powder and ovarian cancer; is that right? 24 A. Where do you -- 25 Q. Take a look at Page 41, the last</p>	<p style="text-align: center;">Page 117</p> <p>1 Evidence for Each of the Hill Criteria of 2 Causation as Applied to Perineal Application of 3 Talc and Ovarian Cancer." 4 Is that right? 5 A. Yes. 6 Q. One of the Hill criteria is 7 consistency; is that right? 8 MS. PARFITT: Objection. Form. 9 A. Yes. 10 Q. Looking at authors' statement on 11 consistency, it states, "15 out of the 30 studies 12 reported positive and significant associations." 13 Is that right? 14 A. Yes. 15 Q. 15 out of 30, that's 50 percent; is 16 that right? 17 MS. PARFITT: Objection. Form. 18 A. Yeah. But I have -- I disagree with 19 their interpretation of consistency as being, you 20 know, statistically significant. I mean, you 21 know, my assessment is, you know, estimates 22 towards greater than one. 23 MR. ZELLERS: Move to strike as 24 nonresponsive. 25 Q. My question was: 15 out of 30 is</p>

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<p>1 50 percent?</p> <p>2 A. Yes.</p> <p>3 MS. PARFITT: Objection. Let me</p> <p>4 object, please.</p> <p>5 Q. That's no better than a coin toss;</p> <p>6 correct?</p> <p>7 MS. PARFITT: Object to the form.</p> <p>8 A. It is 50 percent.</p> <p>9 Q. Would you say that 15 out of 30 means</p> <p>10 there are consistent results across studies?</p> <p>11 A. Well, I mean, again, my definition of</p> <p>12 inconsistency, as noted in my report, is</p> <p>13 different from theirs.</p> <p>14 Q. These are just the case control</p> <p>15 studies; is that right?</p> <p>16 A. When you say -- they just say 30</p> <p>17 studies. Yeah.</p> <p>18 Q. These are case-control studies; is that</p> <p>19 right?</p> <p>20 MS. PARFITT: Objection. Form.</p> <p>21 A. Well, they're both, right? Case</p> <p>22 control and core.</p> <p>23 Q. The authors in Taher also recognize</p> <p>24 that there's no consistent dose-response across</p> <p>25 studies; is that right?</p>	<p>1 consistent evidence. There are studies that</p> <p>2 provide dose-response and other studies that</p> <p>3 don't.</p> <p>4 Q. You currently work for the University</p> <p>5 of Massachusetts; is that right?</p> <p>6 A. Yes.</p> <p>7 Q. You work for both the medical school</p> <p>8 and the medical center; is that right?</p> <p>9 A. Yes.</p> <p>10 Q. Are you aware that the University of</p> <p>11 Massachusetts does not claim that talcum powder</p> <p>12 causes ovarian cancer?</p> <p>13 MS. PARFITT: Objection. Form.</p> <p>14 A. I don't know what -- they're listed on</p> <p>15 their website. I'm not sure they provide any</p> <p>16 information sheet that I am aware of.</p> <p>17 (Printout entitled "Ovarian</p> <p>18 Cancer: Risk Factors" marked Exhibit 18.)</p> <p>19 BY MR. ZELLERS:</p> <p>20 Q. Take a look, if you will, at Deposition</p> <p>21 Exhibit 18.</p> <p>22 MR. TISI: What is 16?</p> <p>23 MR. ZELLERS: Exhibit 16 was the Health</p> <p>24 Canada Decision-Making Framework. It's right</p> <p>25 here.</p>
<p>1 MS. PARFITT: Objection. Form.</p> <p>2 A. Well, let me look at the dose-response</p> <p>3 section.</p> <p>4 Q. Page 21. And I'm looking at the very</p> <p>5 last sentence above Section 3.3.2.</p> <p>6 A. Tell me, which page number?</p> <p>7 Q. Sure. Page 21.</p> <p>8 A. We do have to slow down so that I can</p> <p>9 move between pages, if you don't mind.</p> <p>10 Yes.</p> <p>11 Q. This is in the section "Evidence from</p> <p>12 Human Studies"; correct?</p> <p>13 A. Okay.</p> <p>14 Q. Is that a yes?</p> <p>15 A. Yes.</p> <p>16 Q. The statement by the authors, "When</p> <p>17 conducted, findings from trend analyses were not</p> <p>18 consistent."</p> <p>19 Is that right?</p> <p>20 A. The last line?</p> <p>21 Q. Yes.</p> <p>22 A. Yes. But the criteria for</p> <p>23 dose-response is just exposure-response</p> <p>24 gradients. I mean, it doesn't, you know, say</p> <p>25 as -- even in -- I state in my report, there's no</p>	<p>1 MR. TISI: Oh. I have that, Counsel.</p> <p>2 Thank you.</p> <p>3 BY MR. ZELLERS:</p> <p>4 Q. Have you had an opportunity, Dr. Singh,</p> <p>5 to review Deposition Exhibit 18?</p> <p>6 A. Yes.</p> <p>7 Q. This is a website from the University</p> <p>8 of Massachusetts Memorial Healthcare; is that</p> <p>9 right?</p> <p>10 A. Yes.</p> <p>11 Q. Are you familiar with the website?</p> <p>12 A. I mean, overall website, but not this</p> <p>13 particular document.</p> <p>14 Q. On the second page of Exhibit 18,</p> <p>15 there's a statement by your employer, the</p> <p>16 University of Massachusetts, on use of talcum</p> <p>17 powder.</p> <p>18 Do you see that?</p> <p>19 A. Yes.</p> <p>20 Q. The statement is, "It's not clear if</p> <p>21 using talcum powder on the genital area raises</p> <p>22 the risk for ovarian cancer. Talk with your</p> <p>23 healthcare provider if you decide you want to use</p> <p>24 talcum powder."</p> <p>25 Did I read that correctly?</p>

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<p>1 A. Yes, you did. 2 Q. Why doesn't your institution list talc 3 exposure as a risk factor for ovarian cancer? 4 MS. PARFITT: Objection. Misstates the 5 evidence. 6 A. So, yeah, I mean, first of all, this 7 is -- I've seen this the first time here, but as 8 you can see, again, this is -- we have to go to 9 Page 3 of 4 and it's medical reviewers and they 10 are, you know, basing their opinion on whatever. 11 This was done in 2013. 12 So it depends on the -- it's not that, you 13 know, my medical, you know, employer is listing 14 it. Obviously, it's listed there. 15 And but it's based on the quality of the 16 evidence. This was reviewed on 2016, and it was 17 reviewed by, as you see, the credentials of -- 18 did they review the -- did they review the 19 biological evidence? Did they have any 20 additional information? 21 So I don't disagree with their opinion, I'm 22 just saying. 23 Q. Dr. Singh, do you recommend to your own 24 patients that they avoid talcum powder use? 25 A. Now, I do.</p>	<p>1 take a look at Exhibit 2 or Exhibit 10, whichever 2 is easier for you. 3 A. Page 66? 4 Q. Yes. Your conclusion. 5 A. Yes. 6 Q. You state that peritoneal use of talcum 7 powder products can cause ovarian cancer; 8 correct? 9 A. Yes. 10 Q. Is it your opinion that it does cause 11 ovarian cancer or just that it can? 12 MS. PARFITT: Objection to form. 13 A. I don't know the semantics of what 14 would be -- if -- semantics of can and does. I 15 mean, you can explain to me. Maybe my English is 16 not as good as yours. 17 Q. What type of exposure causes ovarian 18 cancer? 19 A. Perineal application. So I mean, are 20 you asking specific to talc? 21 Q. Yes. With respect to talc exposure, 22 what type of talc exposure causes ovarian cancer? 23 MS. PARFITT: Objection. Form. 24 A. You know, perineal application of talc 25 can, you know, use of talc.</p>
<p>1 Q. When did you begin doing that? 2 A. Last year. 3 Q. Do you ask them if they use talcum 4 powder as part of a routine screening? 5 A. In people that -- sorry. 6 In patients that I talk about ovarian 7 cancer. 8 Q. Is that something that you began doing 9 over the past year? 10 A. I would say sometime last year. 11 Q. What about patients with a long history 12 of use? Do you consider them at elevated risk of 13 developing cancer? 14 MS. PARFITT: Objection. Form. 15 A. So I haven't thought about it that way. 16 I mean, you know, when that discussion about 17 ovarian cancer comes up, we talk about risk 18 factors and, you know, I recommended that. 19 Q. Have you ever recommended prophylactic 20 surgery to remove the fallopian tubes and ovaries 21 that you think -- patients that you think may 22 have had long-term exposure to talc? 23 MS. PARFITT: Objection. Form. 24 A. No. 25 Q. Causation. On Page 66 of your report,</p>	<p>1 Q. What types of -- strike that. 2 What types of talcum powder cause ovarian 3 cancer? 4 MS. PARFITT: Objection. Form. 5 A. So, again, I -- I -- my causal question 6 was the use of talcum powder products and ovarian 7 cancer. I did not disaggregate between X and Y 8 and Z in terms of, you know, this type of talcum 9 powder product. 10 Q. What type of ovarian cancer does talcum 11 powder cause? 12 MS. PARFITT: Objection. Form. 13 A. Talcum powder products are, you know, 14 causally linked to the development of ovarian 15 cancer, but the link is strongest for serous 16 epithelial ovarian cancer. 17 Q. Any other types of ovarian cancer that 18 you believe talcum powder causes? 19 MS. PARFITT: Objection. Form. 20 A. You know, other studies have provided, 21 you know, causal links to borderline, you know, 22 other tumors. But, you know, it's mainly the 23 epithelial ovarian cancer. 24 Q. What dose of talcum powder is required 25 to cause ovarian cancer?</p>

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<p>1 MS. PARFITT: Objection. Form. 2 A. I examined, you know, the causal link 3 between talcum powder products and ovarian cancer 4 as the data was available in the available 5 studies. You know, I could not -- there was 6 no -- I mean, there was data on 7 dose-responsiveness, and we can discuss that. 8 But, you know, I don't know if it's a single 9 application or it's 20 years. I mean, it is 10 regular use and that would cause it. 11 Q. It's correct that you have not 12 evaluated specifically what dose of talcum powder 13 is required to cause ovarian cancer; correct? 14 MS. PARFITT: Object to form. 15 A. Yeah. I mean, I don't know a specific 16 dose that would cause ovarian cancer. 17 Q. What was your methodology for 18 concluding that talc causes ovarian cancer or, I 19 guess to be more precision, serous ovarian 20 cancer? 21 A. Yeah. I mean, mainly -- 22 MS. PARFITT: Objection. 23 A. Yeah. Epithelial ovarian cancer. 24 Q. What was your methodology? 25 A. So, yeah, I did, you know -- so prior</p>	<p>1 Q. You did not conduct a meta-analysis 2 here; is that right? 3 A. Yes. And I -- partly pragmatic 4 reasons. Partly, there were so many other 5 meta-analyses that I, you know -- although I 6 would have done things a little bit differently, 7 and I just didn't feel the need for one more 8 meta-analysis that would be informative. 9 Q. What was your methodology for focusing 10 on certain studies or excluding other studies? 11 A. So I'm not aware that I excluded 12 certain studies, because I, as I compare, I have 13 included all the epidemiologic studies that are 14 here. There's always a possibility that once, 15 you know, when you do a review, that you may 16 have. 17 But, you know, I included all the relevant 18 case-control studies and the cohort studies and 19 the systematic review and meta-analysis that I 20 identified. 21 And, yeah, I mean, I may have weighed 22 studies differently based on their quality, 23 validity and reliability. 24 Q. That's how you tried to make a 25 distinction?</p>
<p>1 to that, I was aware of systematic reviews and 2 other reviews in this area. 3 So I, as a broad -- you know, we should look 4 at the methods section of this report. 5 Do you want to look at the methods? 6 Q. Well, if you have to. I mean, my 7 question was just simply: What was your 8 methodology for concluding that talc causes 9 epithelial ovarian cancer? 10 MS. PARFITT: Dr. Singh, anytime you 11 need to consult your report. 12 A. Yeah. I mean, the methodology was, you 13 know, gathering lines of evidence. You know, 14 assessing for relevance, reliability and, you 15 know, again, assembling other lines of evidence 16 for animal, human studies, the constituents of 17 talc. And then assessing them within an analytic 18 framework, the Bradford Hill, and then, you know, 19 providing a weight-of-evidence opinion based on 20 my professional judgment. 21 Q. In other cases in which you've been 22 retained as an expert, you've conducted a 23 meta-analysis of the available data to reach a 24 conclusion about the relative risk; correct? 25 A. I have.</p>	<p>1 A. Yeah. 2 Q. Do you believe the standard for proving 3 causation in the scientific literature is the 4 same as the one that applies in litigation? 5 MS. PARFITT: Objection. Form. 6 A. Yeah. I mean, the standard for 7 causation, you know, is -- at least I was 8 applying the same standard. 9 Q. Are you familiar with the FDA analysis 10 of the Bradford Hill factors and that they have 11 concluded that causation is not established with 12 respect to talc and ovarian cancer? 13 MS. PARFITT: Objection. Misstates the 14 evidence. 15 A. I am aware of a FDA letter. I'm not 16 sure that there's a Bradford Hill analysis. And 17 if you can share that with me, that would be -- 18 Q. Please review Deposition Exhibit 19. 19 (Letter dated April 1, 2014 20 marked Exhibit 19.) 21 MS. PARFITT: Thank you. 22 BY MR. ZELLERS: 23 Q. Deposition Exhibit 19 is a letter from 24 the FDA to Sam Epstein, dated April 1st of 2014; 25 is that right?</p>

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1	A. Yes.	1 MS. PARFITT: Objection. Form.
2	Q. And when I say "dated," there's a stamp	2 A. So just to clarify, where do they say
3	at the top that says April 1, 2014; correct?	3 they apply the Bradford Hill in this document?
4	A. Yes.	4 Q. You're familiar with the Bradford Hill
5	Q. Have you reviewed this FDA analysis	5 criteria; is that right?
6	before today?	6 A. Yes. I use it, but in this FDA
7	A. Yes. I have reviewed the letter.	7 document, where does it state they apply the --
8	Yeah.	8 Q. It is one of the criteria for
9	Q. On Page 4 of the FDA document, at the	9 consistency across studies. Is that a Bradford
10	bottom, do you see that?	10 Hill criteria?
11	A. I do.	11 A. But exactly they don't go through all
12	Q. The FDA noted that selection bias	12 of them. So I don't know if they did a Bradford
13	and/or uncontrolled confounding result in	13 Hill. So how can I just assume that? They don't
14	spurious positive associations between talc use	14 talk about, you know, specificity. They don't
15	and ovarian cancer; is that right?	15 talk about strength of association. So I can't
16	MS. PARFITT: Objection. Form.	16 assume that they're applying Bradford Hill.
17	A. Yes. That's what they conclude.	17 Q. IARC did address the Bradford Hill
18	Q. The FDA notes a lack of consistency in	18 considerations; is that right?
19	the study results; is that right?	19 A. Yes. In the year 2005. That was
20	MS. PARFITT: Objection.	20 around 15 years ago.
21	A. Yes. And this was conducted in, I	21 Q. IARC rejected classification of talc as
22	don't know, 2014, 2013.	22 carcinogenic and, instead, assigned it to the
23	Q. The FDA specifically states, "Results	23 classification of possibly carcinogenic to
24	of case-control studies do not demonstrate a	24 humans; is that right?
25	consistent positive association across studies";	25 MS. PARFITT: Objection. Misstates the
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1	is that right?	1 evidence.
2	A. Yes. That's what they state.	2 A. So, again, you know, just clarifying
3	Q. The FDA also states that,	3 that this was done in 2005, with evidence that
4	"Dose-response evidence is lacking"; is that	4 has accumulated since then. And I wouldn't
5	right?	5 classify it -- I have served on IARC panels, and
6	MS. PARFITT: Objection.	6 I'm very familiar with their process. They don't
7	A. Where is that? I'm sorry.	7 reject anything. They classify drugs in the
8	Q. Look at Paragraph 3 at the bottom of	8 particular categories that they're supposed to
9	Page 4.	9 be.
10	A. Yes.	10 So it was actually classified as possibly
11	Q. The FDA further concludes that, "A	11 carcinogenic.
12	cogent biological mechanism by which talc might	12 Q. Take a look at Exhibit 20.
13	lead to ovarian cancer is lacking"; is that	13 (IARC Classifications marked
14	right?	14 Exhibit 20.)
15	MS. PARFITT: Objection to form.	15 BY MR. ZELLERS:
16	A. Yeah. But it also concludes, in the	16 Q. Deposition Exhibit 20 are the IARC
17	same letter, that there is, you know, the	17 classifications; is that right?
18	potential for talc to migrate. So, I mean, I'm	18 I'm sorry. Did you answer the question?
19	just trying to be -- that's what I reviewed.	19 A. Yes. Sorry.
20	Yes, it does say that there's no biological	20 Q. That's okay.
21	mechanism.	21 A. Yes.
22	Q. You reviewed -- or strike that.	22 Q. All right. It lists out, starting with
23	In addition to the FDA looking at and	23 Group 1, carcinogenic to humans, down to Group 4;
24	applying the Bradford Hill criteria, IARC does	24 is that right?
25	that as well; is that right?	25 A. Yes.

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<p>1 Q. There are 120 agents that have been 2 determined by IARC, the International Agency for 3 Research on Cancer, as Group 1 agents, 4 carcinogenic to humans; is that right? 5 A. Yeah. That includes asbestos, many 6 others. 7 Q. That is the only category in which IARC 8 finds sufficient evidence in humans; correct? 9 A. No. To clarify, they have -- it may be 10 in my report, that they have a particular way of 11 defining that category. And it may not be just 12 sufficient evidence in humans. They may be 13 something else. If I can look back at my report. 14 Q. Well, if it's in your report, it's in 15 your report. And we can all read that. 16 My question to you is: Group 1 is a 17 category where IARC has determined that there is 18 sufficient evidence in humans to classify an 19 agent as carcinogenic; is that right? 20 MS. PARFITT: Objection. Misstates 21 Dr. Singh's testimony. 22 A. I mean, do I get time to -- 23 Q. Doctor, I only have seven hours here. 24 So go to Exhibit 20. I'll make this quick. 25 Do you see Exhibit 20 in front of you?</p>	<p>1 A. Yes. 2 Q. So out of the 1,000 agents that IARC 3 has reviewed, it has placed only one agent in 4 Group 4, probably not carcinogenic; is that 5 right? 6 A. Yeah. But 499 are not classifiable as 7 it relates, so. 8 Q. IARC doesn't even have a Group 5, not 9 carcinogenic, does it? 10 A. Well, I mean, all the -- once it's 11 probably not carcinogenic, it's not carcinogenic. 12 Q. The best that IARC can state is that an 13 agent is probably not carcinogenic to humans, 14 which is Group 4; is that right? 15 A. Yes. 16 MS. PARFITT: Objection. 17 Q. All right. As with -- strike that. 18 With genital talc, the IARC group 2B 19 designation is based on limited evidence in 20 humans; is that right? 21 MS. PARFITT: Objection. 22 A. Yes. There was some animal 23 consideration. There were some biological 24 mechanisms, but, again, in 2005, and as I state 25 in my report, which I have, and there have been</p>
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<p>1 A. Yeah. 2 Q. This is the IARC classifications; is 3 that right? 4 A. Okay. Mm-hmm. 5 Q. Group 1 states, "Carcinogenic to 6 humans." 7 A. Yes. 8 Q. Do you see that? 9 A. Yeah. 10 Q. All right. Group 2A, there are 82 11 agents that are probably carcinogenic to humans; 12 is that right? 13 A. Yes. 14 Q. IARC is certainly capable of reaching a 15 decision that something is a known or probable 16 carcinogen; is that right? 17 MS. PARFITT: Objection. 18 A. Yes. I mean, 15 years ago, yes, based 19 on the evidence. 20 Q. It has placed at least 200 agents in 21 Group 1 or Group 2A; is that right? 22 A. Yes. 23 Q. There's only one agent in Group 4, 24 probably not carcinogenic to humans; is that 25 right?</p>	<p>1 multiple studies since then. And that, you know, 2 that they should be revisited. 3 Q. That means IARC cannot rule out chance, 4 bias or confounding with reasonable confidence; 5 correct? 6 A. Based on the data they had at that 7 time. 8 Q. What else is in 2B, possibly -- strike 9 that. 10 What else is in class 2B, possibly 11 carcinogenic? Are you familiar with Ginkgo 12 biloba? 13 MS. PARFITT: Objection to form. 14 A. I know the name. 15 Q. Are you aware that that's classified as 16 a 2B agent by IARC? 17 A. I don't know. I mean, you know, they 18 also classify as it relates to exposure. So I 19 haven't reviewed Ginkgo biloba to be able to 20 answer the question. 21 Q. Pickled vegetables, 2B; is that right? 22 A. How do I know? Show me. 23 Q. Occupational -- 24 A. That's what you're saying. 25 Q. -- carpentry and joinery, 2B? Are you</p>

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<p>1 aware of that?</p> <p>2 A. Again, this is 2015. And, you know,</p> <p>3 yes. I don't know I'm aware of that. I mean,</p> <p>4 you can't put words in my mouth that pickle --</p> <p>5 how do I know that?</p> <p>6 Q. There's no chance of my putting words</p> <p>7 in your mouth. IARC can change its</p> <p>8 classification for a substance; is that right?</p> <p>9 A. It does. I mean, from what I</p> <p>10 understand.</p> <p>11 Q. It has not changed its Group 2B</p> <p>12 classification since it determined that talc was</p> <p>13 a 2B agent; is that right?</p> <p>14 MS. PARFITT: Objection. Form.</p> <p>15 A. It has not carried out an assessment</p> <p>16 since 2005, that I'm aware of.</p> <p>17 Q. Has IARC changed its group 2B</p> <p>18 classification?</p> <p>19 A. No --</p> <p>20 MS. PARFITT: Objection.</p> <p>21 A. -- and as far as I'm aware, no</p> <p>22 assessment has been carried out.</p> <p>23 Q. Bradford Hill, strength of association</p> <p>24 is one of the criteria; is that right?</p> <p>25 A. I don't consider them criteria.</p>	<p>1 Q. Doctor, I'm asking you questions.</p> <p>2 My question is: Epidemiologists consider a</p> <p>3 1.3 odds ratio in case-control studies to be a</p> <p>4 weak or modest association; correct?</p> <p>5 MS. PARFITT: Objection. Misstates the</p> <p>6 evidence and the science.</p> <p>7 A. Not the epidemiologists that I</p> <p>8 contacted. You know, we look at various, you</p> <p>9 know -- as I state in my report, you know, you</p> <p>10 can have modest associations and you can have a</p> <p>11 relative risk of one that are lower, and if you</p> <p>12 go to a low-prevalence population, and then</p> <p>13 remove competing risk factors, those can be</p> <p>14 attenuated.</p> <p>15 So the epidemiologists that I interact with,</p> <p>16 and we don't look at this as weak or modest or</p> <p>17 high. We just look at it in the whole causal</p> <p>18 framework.</p> <p>19 Q. Can you point to any peer-reviewed</p> <p>20 literature on talc and ovarian cancer that states</p> <p>21 that 1.3 odds ratio is a strong association?</p> <p>22 A. Again, that's not -- I'm not looking at</p> <p>23 talc at 1.3 is a strong association. I'm stating</p> <p>24 that, yeah, I can't point to the talc literature</p> <p>25 that states that.</p>
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<p>1 There's overviews. I think -- I'm just picking</p> <p>2 the terms. I mean, they're overviews of Bradford</p> <p>3 Hill. Doesn't list them as criteria, because</p> <p>4 criteria implies a list of things that you can</p> <p>5 pick and choose from.</p> <p>6 Q. You would call them what?</p> <p>7 A. Overviews. Actually, that's what he</p> <p>8 calls them.</p> <p>9 Q. Overviews. Strength of association is</p> <p>10 a Bradford Hill overview; is that right?</p> <p>11 A. Yes.</p> <p>12 Q. Epidemiologists consider a 1.3 odds</p> <p>13 ratio in case-control studies to be a weak or</p> <p>14 modest association; is that right?</p> <p>15 MS. PARFITT: Objection. Misstates the</p> <p>16 evidence.</p> <p>17 A. No. I mean, again, strength of</p> <p>18 association based on -- depends on the study</p> <p>19 question at hand, the study design, and, you</p> <p>20 know, the quality of the underlying data. So</p> <p>21 strength of association, in and of itself, does</p> <p>22 not provide any -- any -- any sort of -- any</p> <p>23 answer to the causal question. Again, I'll go</p> <p>24 back to my report, because I have to go back to</p> <p>25 my report.</p>	<p>1 Q. IARC does not refer to this as a strong</p> <p>2 association; correct?</p> <p>3 MS. PARFITT: Objection. Form.</p> <p>4 A. I don't know what -- the particular</p> <p>5 objective or qualifier they use. I mean --</p> <p>6 Q. FDA doesn't refer to this as a strong</p> <p>7 association, do they?</p> <p>8 MS. PARFITT: Objection to form.</p> <p>9 A. Again, you have to sort of just show me</p> <p>10 where they are, and I'll agree with it.</p> <p>11 Q. Have you seen any statement from IARC</p> <p>12 that there is a strong association between</p> <p>13 genital talc use and ovarian cancer?</p> <p>14 A. I don't recall that particular phrase.</p> <p>15 Q. All right. The National Cancer</p> <p>16 Institute doesn't refer to this as a strong</p> <p>17 association; correct?</p> <p>18 MS. PARFITT: Objection to form.</p> <p>19 A. I don't recall that particular</p> <p>20 objective.</p> <p>21 Q. Do your opinions on strength of</p> <p>22 association apply equally to all forms of ovarian</p> <p>23 cancer?</p> <p>24 MS. PARFITT: Objection. Form.</p> <p>25 A. Again, I'm -- you know, my opinions are</p>

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<p>1 not -- again, we can parse this out. I mean, I 2 was just looking at the causal question. Is talc 3 causally related to the development of ovarian 4 cancer?</p> <p>5 And, you know, most of the evidence that I 6 examined were -- was provided in terms of serious 7 epithelial cancer, and --</p> <p>8 Q. I thought you told me that your 9 methodology was to look at the Bradford Hill 10 overview factors; is that right?</p> <p>11 A. Yeah.</p> <p>12 Q. All right. And one of those factors is 13 strength of association; is that right?</p> <p>14 A. Yes.</p> <p>15 Q. And that's a factor that you looked at; 16 correct?</p> <p>17 A. Yes.</p> <p>18 Q. Do your opinions on strength of 19 association apply equally to all forms of ovarian 20 cancer?</p> <p>21 MS. PARFITT: Objection. Form.</p> <p>22 A. Well, I did not disaggregate my, you 23 know, opinion by histologic subtype.</p> <p>24 Q. You cite to the Langseth paper; is that 25 right?</p>	<p>1 me when you have that.</p> <p>2 A. Yeah.</p> <p>3 Q. "Proposal to research community." Do 4 you see that?</p> <p>5 A. Yes.</p> <p>6 Q. Tell me if I read this statement by the 7 authors correctly.</p> <p>8 "The current body of experimental and 9 epidemiological evidence is insufficient to 10 establish a causal association between perineal 11 use of talc and ovarian cancer risk. 12 Experimental research is needed to better 13 characterize deposition, retention, and clearance 14 of talc to evaluate the ovarian carcinogenicity 15 of talc."</p> <p>16 Did I read that correctly?</p> <p>17 A. Yes.</p> <p>18 Q. You're drawing conclusions from this 19 study that are broader than the study authors' 20 own conclusions; is that right?</p> <p>21 MS. PARFITT: Objection.</p> <p>22 A. I didn't draw. So you were asking me 23 that whether I drew a single conclusion from the 24 Langseth. I mean, there are -- I think I cite 25 all the meta-analyses first, and then -- so I'm</p>
<p>1 A. I do.</p> <p>2 Q. You state that the authors in Langseth 3 2008 found an odds ratio ranging between 1.12 to 4 1.4, depending upon the type of study design. Is 5 that right? This is on Page 22 of your report.</p> <p>6 A. Okay.</p> <p>7 Q. Langseth, in fact, rejects causation 8 and says more study is needed; correct?</p> <p>9 MS. PARFITT: Objection. Form.</p> <p>10 A. I don't know why you have stated they 11 reject causation. Show me that statement in that 12 article.</p> <p>13 Q. Take a look, if you will, at Deposition 14 Exhibit 21.</p> <p>15 (Article entitled "Perineal use 16 of talc and risk of ovarian cancer" marked 17 Exhibit 21.)</p> <p>18 MS. PARFITT: Thank you.</p> <p>19 MR. ZELLERS: Mm-hmm.</p> <p>20 BY MR. ZELLERS:</p> <p>21 Q. Deposition Exhibit 21 is the Langseth 22 2008 meta-analysis that you cite in your report; 23 is that right?</p> <p>24 A. Yeah. It's one of the meta-analyses.</p> <p>25 Q. Turn to Page 359 of Exhibit 21. Tell</p>	<p>1 not just drawing inferences from there.</p> <p>2 And the authors, as far as I am aware, A, 3 there have been several other studies published 4 since then. This is 2007. So we have 12 years 5 and several publications. And, B, the authors 6 themselves have provided opinions that they are 7 causally related. Dr. Siemiatycki, as far as I'm 8 aware.</p> <p>9 Q. Did you cite this paper in your report?</p> <p>10 A. Yes.</p> <p>11 Q. The authors in this paper state that 12 the current body of experimental and 13 epidemiological evidence is insufficient to 14 establish a causal association between perineal 15 use of talc and ovarian cancer risk; is that 16 right?</p> <p>17 MS. PARFITT: Objection. Misstates the 18 evidence in this case. The science and 19 testimony.</p> <p>20 A. It says the current body of evidence. 21 This is current as of two thousand and whenever.</p> <p>22 Q. This is the paper. 2008, Exhibit 21, 23 that you relied on --</p> <p>24 A. Yeah.</p> <p>25 Q. -- and cite in your report; correct?</p>

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<p>1 A. This is not the only -- 2 MS. PARFITT: Objection. Form. 3 A. -- paper. I cited on 2017, 2018. 4 Q. Go to the acknowledgments section. 5 Do you see the acknowledgments off to the 6 left? 7 A. Yes. 8 Q. The authors are IARC members; is that 9 right? 10 A. Yes. 11 Q. The authors of this paper, Langseth? 12 A. Yes. 13 Q. Another overview factor of Bradford 14 Hill is consistency; is that right? 15 A. Yes. 16 Q. The literature does not show a 17 consistent association between talc use and 18 ovarian cancer; right? 19 MS. PARFITT: Objection to form. 20 A. I disagree. 21 Q. The cohort studies do not show an 22 association between talc use and ovarian cancer; 23 correct? 24 MS. PARFITT: Objection to form. 25 A. I disagree. The cohort studies show</p>	<p>1 overall evidence, my testimony is that the cohort 2 study estimates are in line with the case-control 3 evidence and provide evidence of consistency. 4 Q. The cohort studies themselves, looking 5 just at those studies, and I'm going to ask you 6 about the others -- 7 A. Sure, sure. 8 Q. -- do not show a consistent 9 association between talc use and ovarian cancer; 10 correct? 11 MS. PARFITT: Objection. Misstates the 12 testimony. 13 A. So that's not the way I look at 14 evidence. I look at everything. That's what you 15 want to look at. You can look at it. 16 I just look at evidence, you know, whatever 17 is out there. So I didn't look at cohort studies 18 in and of themselves. 19 And that's why we do systematic reviews. 20 That's why we do meta-analyses, because you want 21 to look at everything at the same time. 22 Q. You did not look at the cohort studies 23 individually; correct? 24 A. I did. And they're in my report. 25 Q. If you looked at the cohort studies</p>
<p>1 significant -- you know, increased risk, which is 2 in the same direction as the case-control 3 studies, which, as several of the authors, such 4 as Penninkilampi and others and me, interpret as 5 evidence of consistency. 6 Q. The cohort studies are what? 7 A. I'm sorry? 8 Q. List out the cohort studies for us. 9 A. Penninkilampi is a meta-analysis. They 10 are an interpretation of the cohort studies. 11 Q. You told me before that to do a proper 12 analysis, you have to go and look at the 13 individual studies; is that right? 14 A. I do. I did. 15 Q. And you went and you reviewed the 16 cohort studies; is that right? 17 A. Yes. 18 Q. And it's your testimony that those 19 cohort studies do show an association between 20 talc use and ovarian cancer. Is that your 21 testimony? 22 A. So I reviewed the cohort studies in 23 line with 30 case-control studies in line with 24 70, you know -- sorry -- seven other 25 meta-analyses and, you know, synthesizing the</p>	<p>1 individually, they do not show a consistent 2 association between talc use and ovarian cancer; 3 correct? 4 MS. PARFITT: Objection. Misstates the 5 evidence. 6 A. So how can you look at individually and 7 answer questions about consistency? To answer 8 questions about consistency, you have to look 9 across studies. And when you look across 10 studies, you have to bring all studies. 11 And that's when you can opine on 12 consistency. 13 Q. Doctor, my question relates just to the 14 cohort studies. 15 A. I understand. 16 Q. The cohort studies do not demonstrate 17 an association between talc use and ovarian 18 cancer; correct? 19 MS. PARFITT: Objection. Misstates the 20 evidence. 21 Q. Just the cohort studies. 22 MS. PARFITT: Objection. Misstates the 23 evidence. 24 A. First of all, you know, they do 25 increase -- an increase of serous epithelial</p>

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<p>1 ovarian cancer in one of them, and cumulative 2 evidence from cohort studies shows an excess risk 3 of ovarian cancer which is not statistically 4 significant.</p> <p>5 Q. Hospital-based, case-control studies 6 collectively do not show an association between 7 talc use and ovarian cancer; correct?</p> <p>8 MS. PARFITT: Objection. Misstates the 9 evidence.</p> <p>10 A. That is incorrect, because 11 hospital-based, case-control studies also show an 12 association between talc use and ovarian cancer 13 which is not, you know -- and I would have to 14 look again. Please bring out the studies, 15 because I want to look at some of the studies 16 before I, you know, provide specific -- you're 17 asking very specific questions about 18 hospital-based studies, so I have to look at the 19 studies.</p> <p>20 Q. If you can't answer a question, tell me 21 you can't answer it. But my question is, 22 hospital-based, case-control studies collectively 23 do not show an association between talc use and 24 ovarian cancer; correct?</p> <p>25 MS. PARFITT: Objection. Misstates the</p>	<p>1 MS. PARFITT: Wait. Are you in the 2 middle?</p> <p>3 A. Yeah. That's incorrect. It should be 4 the population-based case studies. That's my -- 5 you know, that's a misstatement on my part.</p> <p>6 Q. So you need to amend your report?</p> <p>7 A. Yeah. Yeah.</p> <p>8 Q. So if we go to Page 54 --</p> <p>9 A. Yeah.</p> <p>10 Q. -- Paragraph 8, you state that it's an 11 error when you state, "As opposed to 12 hospital-based controls, which may be less 13 susceptible to selection bias, the 14 population-based, case-control studies have 15 consistently showed a higher estimate of 16 increased risk of ovarian cancer associated with 17 talc use."</p> <p>18 A. Yeah. And I was applying the less 19 susceptible to the population-based statement.</p> <p>20 Q. How do you need to correct this 21 statement?</p> <p>22 A. I don't know how, you know. Yeah, it 23 would be as opposed to hospital-based controls, 24 population-based, case-control studies may be 25 less susceptible to selection bias.</p>
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<p>1 evidence.</p> <p>2 A. No. I disagree. And, again, I'd have 3 to -- can we pull the Penninkilampi paper?</p> <p>4 Q. Doctor, I'm going to ask you about that 5 paper.</p> <p>6 A. No. But then how can I answer 7 questions?</p> <p>8 Q. I need you to answer my questions.</p> <p>9 If you can't answer a question, then tell me 10 you can't answer the question.</p> <p>11 A. I'm willing to answer the question. 12 Just bring me the evidence so that I can look at 13 it.</p> <p>14 I'm sorry. I'm trying my best.</p> <p>15 Q. In your report, you state that 16 hospital-based, case-control studies may be less 17 susceptible to selection bias than 18 population-based, case-control studies; correct?</p> <p>19 A. Where do I state that?</p> <p>20 Q. Look at your report on Page 54, 21 Paragraph 8.</p> <p>22 A. Actually, I state entirely the 23 opposite. I state that the population-based 24 studies may have --</p> <p>25 Q. So --</p>	<p>1 Q. You believe that population-based 2 studies may be susceptible to less selection 3 bias?</p> <p>4 A. May be less susceptible.</p> <p>5 Q. Take a look at Exhibit 21. That's the 6 article we looked at a few minutes ago. 7 Do you see that?</p> <p>8 A. That's the Langseth?</p> <p>9 Q. Yes. The Langseth article. 10 Do you see that?</p> <p>11 A. Yes.</p> <p>12 Q. Take a look under the hospital-based 13 studies.</p> <p>14 Do you see that on Page 359?</p> <p>15 A. Yes.</p> <p>16 Q. You are the one who cites this paper 17 and relies on it; is that right?</p> <p>18 A. Yes.</p> <p>19 Q. If we look at pooled odds ratio for 20 hospital-based studies --</p> <p>21 A. Mm-hmm.</p> <p>22 Q. -- the odds ratio is 1.2 and the 23 confidence interval is a .92 to 1.36; is that 24 right?</p> <p>25 A. Yes.</p>

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<p>1 Q. That means that it may or may not be -- 2 show an association between talc use and ovarian 3 cancer. The pooled result; is that right?</p> <p>4 MS. PARFITT: Objection to form.</p> <p>5 Q. Given that confidence interval.</p> <p>6 MS. PARFITT: Objection to form.</p> <p>7 A. Yeah. Again, this is -- you know, at 8 that time. I don't know what studies have been 9 added. We can look in the new paper, which I'm 10 not sure why it's not been brought up.</p> <p>11 But, yes, it does show an excess risk, not 12 statistically significant, consistent with the 13 population studies.</p> <p>14 Q. All right. Hospital-based control 15 studies, you're more likely to be comparing 16 hospitalized patients to hospitalized patients; 17 is that right?</p> <p>18 A. Yes. That's why they're hospital 19 based.</p> <p>20 Q. Population-based studies, you're more 21 likely to be comparing ill people to healthy 22 people; is that right?</p> <p>23 A. Yeah. Your source of control. I 24 mean -- well, it depends. How do you know if 25 it's ill people? If you are sourcing from the</p>	<p>1 behavioral change bias, which attenuates towards 2 the null. It induces an element of 3 misclassification of exposure, which goes towards 4 null. It limits the duration of assessment, 5 which, you know, limits assessment. So it 6 doesn't have power to suggest.</p> <p>7 So, yes, recall bias is a feature that is 8 better assessed in the cohort studies, but recall 9 bias, for exposures that are daily use, such as 10 talc, are less likely, you know, to be in play. 11 Recall bias -- let me finish my explanation.</p> <p>12 Recall bias would less likely be in play 13 because we don't see evidence with nonperineal 14 talc exposure. Recall bias are less likely to be 15 in play because we only see it with epithelial 16 ovarian cancer.</p> <p>17 So, yes, cohort studies less, but there are 18 other biases.</p> <p>19 Q. Couldn't recall bias explain the 20 difference between cohort studies and 21 retrospective case-control studies?</p> <p>22 MS. PARFITT: Objection. Form.</p> <p>23 A. I don't think so. There's multiple 24 other biases and multiple other strengths and 25 limitations that would have to be considered.</p>
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<p>1 population in both, it's a population-based 2 study.</p> <p>3 Q. Population-based, case-control studies, 4 the ones that you look at only show a weak 5 association between talc use and ovarian cancer; 6 is that right?</p> <p>7 MS. PARFITT: Objection. Misstates the 8 evidence.</p> <p>9 A. I think we went about that weak. I 10 don't believe that they are weak. We went 11 through that.</p> <p>12 Q. That's your --</p> <p>13 A. Yeah. My opinion is that they're not 14 weak evidence.</p> <p>15 Q. Isn't the absence of an association in 16 the cohort studies especially significant in that 17 the study design reduces the likelihood of recall 18 bias?</p> <p>19 MS. PARFITT: Objection to form.</p> <p>20 A. Yes. I mean, it is important to look 21 at recall bias in the cohort studies. But the 22 study design introduces several elements of other 23 bias for an outcome such as ovarian cancer.</p> <p>24 You know, I'm answering your question, 25 because you asked about bias. It introduces</p>	<p>1 Q. You cite to Berge, a 2017 paper, in 2 your report; is that right? Is that correct?</p> <p>3 A. Yes.</p> <p>4 MR. ZELLERS: Take a look at 5 Exhibit 22. (Article entitled "Genital use 6 of talc and risk of ovarian cancer: A 7 meta-analysis" marked Exhibit 22.)</p> <p>9 MR. ZELLERS: Ms. Court Reporter, where 10 do you want me to put it, maybe here, on top?</p> <p>11 COURT REPORTER: Sure.</p> <p>12 MR. TISI: Thank you.</p> <p>13 BY MR. ZELLERS:</p> <p>14 Q. Deposition Exhibit 22 is a paper that 15 you cite by Berge, is the first named author, 16 2017. It's a recent meta-analysis; is that 17 right?</p> <p>18 A. Yes.</p> <p>19 Q. Go to Page 6 of the Berge paper, 20 Exhibit 22.</p> <p>21 The authors conclude that, "Information bias 22 from retrospective self-report of talc use is a 23 possible explanation for the association detected 24 in case-control studies." Is that right?</p> <p>25 A. Yes.</p>

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<p>1 Q. What was your methodology for 2 discounting the effect of recall bias in the 3 population-based, case-control studies? 4 A. I mean, it's not like there's a -- once 5 recall is operational, there are no methods that 6 you can and do discount. But just the quality 7 and, you know, the quantity of evidence over 8 studies and the fact that even the cohort 9 studies, despite these limitations, show an 10 increased risk suggests that recall bias, while 11 it is potential, cannot explain -- be the only 12 explanation for a causal link between talc and 13 ovarian cancer. You cannot adjust for recall 14 bias after the completion of the study. 15 Q. What is the rate of error in that 16 methodology? 17 A. I think that none of them have 18 calculated it. And Dr. Cramer has done in his 19 last study. And it appears that you'd have to 20 need a significant degree of recall bias. And I 21 am going to reference my report. 22 Q. Okay. Didn't the cohort studies 23 involve a much greater -- 24 A. I'm not done. 25 MS. PARFITT: Excuse me.</p>	<p>1 that the case-control stories are more powered. 2 Q. Do you agree that some case-control 3 studies have shown statistically significant 4 findings and others have not? 5 A. Yes. 6 Q. What is your methodology for weighing 7 the lack of consistency in statistical 8 significance across studies? 9 MS. PARFITT: Objection. Form. 10 A. I can answer that. Yeah. 11 So the methodology for correcting the lack 12 of significance, that's why you do a 13 meta-analysis. That's an inverse variance 14 weighted meta-analysis. You -- so all of these 15 studies have accounted for the fact that their 16 confidence intervals are crossing 1. And that's 17 how they have accounted for lack of a statistical 18 significance. 19 So you can see that all of these estimates 20 are weighted by sample size. So -- 21 Q. Do you agree that if a study does not 22 show a statistically significant association, it 23 could mean that no risk exists? Correct? 24 MS. PARFITT: Objection. Form. 25 A. In the context of that study. But,</p>
<p>1 A. I'm done. 2 MS. PARFITT: One moment. He wanted to 3 reference something in his report. 4 A. Yeah. The risk of exposure would have 5 to be very high to nullify the increased risk. 6 Q. Didn't the cohort studies involve a 7 much greater number of women than the 8 case-control studies? 9 MS. PARFITT: Objection. Misstates the 10 evidence. 11 A. Yeah. But their combined number of 12 ovarian cancer cases was 890. So power is only 13 -- depends on the number of cases. 14 Q. What was your methodology for weighing 15 the power of the cohort studies versus the 16 case-control studies? 17 A. I mean, retrospective calculations of 18 power are, you know, not really recommended once 19 you already have the results. I mean, we already 20 see that the overall cumulative evidence 21 from many meta-analyses suggests an increased -- 22 you know, provides an increased risk. 23 And we know that there's thousands of cases 24 in the case control. There's, you know, I don't 25 know how many cases in the cohort, so we know</p>	<p>1 again, I am looking at the cumulative evidence. 2 Q. It could mean -- strike that. 3 It could just be occurring by chance; is 4 that right? 5 MS. PARFITT: Objection. Form. 6 A. I'm looking at the whole body of 7 evidence. 8 In the context of a single study, yes. 9 Q. If a study is underpowered it could be 10 because the difference in risk is too small to 11 detect such as a risk ratio smaller than 1.15; 12 isn't that right? 13 A. Yes. It's possible. 14 Q. All right. You have a criticism in 15 your report of the Nurses' Health Study; is that 16 right? 17 MS. PARFITT: Objection to form. 18 A. I don't have -- again, I don't have 19 criticisms. I have pointed out the strengths and 20 limitations. 21 Q. Well, let's look at some of those. 22 On Pages 40 and 41 of your report, you 23 discuss the Gates 2008 study; is that right? 24 A. 40. Yes. 25 Q. The Gates 2008 study showed a</p>

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<p>1 statistically significant increased risk of total 2 epithelial ovarian cancer; is that right? 3 A. Let me just look at it. There's so 4 many of these. Yes. 5 Q. The Gates 2008 study used data 6 collected in the Nurses' Health Study; is that 7 right? 8 A. Yes. There was another part to it as 9 well. 10 Q. In the Nurses' Health Study, the 11 participants were asked about their talc exposure 12 in one questionnaire in 1982; is that right? 13 A. Yes. 14 Q. When they were asked about their talc 15 use, the participants were between 36 and 61 16 years of age; is that right? 17 A. Yes. 18 Q. As you state in your report, you agree 19 that, although talc exposure -- and I'm looking 20 at Page 41 -- 21 A. Yes. 22 Q. The first paragraph. You agree that, 23 "Although talc exposure was only measured in the 24 1982 Nurses' Health Study questionnaire, when 25 participants were between 36 to 61 years of age,</p>	<p>1 Study questionnaire; correct? 2 A. Yes. 3 Q. And you cite that on Page 48 of your 4 report, second paragraph; is that right? 5 A. Yes. 6 Q. You state, "Further, as discussed 7 above, determining never use, based only on a 8 one-time question, near the start of the study, 9 14 years prior to terminating the study in 1996, 10 introduces unidirectional behavioral change bias, 11 likely misclassifying some ever users who used 12 talc during the study as never users and biased 13 the findings toward the null." 14 Is that what you state in your report? 15 A. Let me just read it. Yes. 16 Q. So when you discuss the Gertig 2000 17 study, you say that, because the participants in 18 the Nurses' Health Study were only about or only 19 asked about talc use once, near the beginning of 20 the study, women who started using talc after 21 they completed that questionnaire could have been 22 misclassified as never users; is that right? 23 A. Yeah. 24 Q. But when you talk about the study that 25 you believe supports your opinion --</p>
<p>1 the number of users who began talc use after this 2 is likely small, as shown by the fact that more 3 than 95 percent of controls with regular talc in 4 the NECC reported talc use before age 35." 5 A. Yes. 6 Q. Is that correct? 7 A. Yes. 8 Q. Later in your report, on Pages 47 and 9 48, you discuss the Gertig 2000 study; is that 10 right? 11 A. Yes. 12 Q. That study also uses the data from the 13 Nurses' Health Study; correct? 14 A. Yes. It's all part of the same cohort. 15 Q. That study, Gertig 2000, did not find a 16 statistically significant relationship between 17 daily talc use and all types of ovarian cancer; 18 is that right? 19 A. Yeah. Again, I mean, they are 20 different -- they're the same cohort with 21 different follow-up time, different design. But 22 it did not. And it found an increased risk for 23 serous ovarian cancer. 24 Q. Gertig 2000, that study also relied on 25 the national -- strike that -- the Nurses' Health</p>	<p>1 Page 163 2 A. Yeah. 3 Q. -- Gates 2008, you recognize that the 4 vast majority of women who use talc initiate use 5 before age 36; is that right? 6 A. Yeah. But it does not -- both points 7 are valid. I mean, I'm just stating the 8 limitations of the Gates study and the Gates 9 analysis. So. 10 I don't see an incongruity that you're 11 trying to point out. I'm just saying the 12 proportion of women who were never users, the 13 number of users who began is likely small. But 14 it still does not eliminate the possibility of 15 unidirectional behavioral change bias. 16 Q. When you're looking at a cohort study, 17 Gertig 2000 that does not support your opinion, 18 you're talking about limitations; correct? 19 MS. PARFITT: Objection. Misstates his 20 testimony. 21 A. I'm not talking about a study that does 22 not support mine. I'm looking at the strengths 23 and limitations of a study. 24 Q. You state two different things, 25 depending upon whether you're talking about Gates 2008 or Gertig 2000; correct?</p>

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<p>1 MS. PARFITT: Objection. Misstates his 2 testimony. 3 A. I am not. 4 First of all, they are two different 5 analyses of a cohort. So they're not two 6 different things about. 7 And I'm pointing out, you know, the reasons 8 that that -- so I'm, you know, pointing out in 9 Gates that, yes, talc exposure is a single-time 10 exposure. And it is -- you know, introduces an 11 element of bias. 12 But I'm also pointing out in Gates why that 13 bias is likely to be, you know, small coming from 14 the other consortium. 15 Q. But you don't say that when you discuss 16 Gertig 2000, do you? 17 A. Yeah. Because it wasn't done in 18 conjunction with the NECC consortium. 19 Q. All right. Look at Page 49 of your 20 report. You discuss the Houghton 2014 study; is 21 that right? 22 A. Yes. 23 Q. All right. Houghton did not find a 24 statistically significant increase in the risk of 25 ovarian cancer with perineal talc use; is that</p>	<p>1 participants in the Houghton 2014 study was 63.3 2 years at baseline, with 12.4 years of follow-up 3 on average; is that right? 4 A. Yes. 5 Q. And then you say that, because 6 participants were not asked again about talcum 7 powder use during follow-up, people who initiated 8 talc use after the study began were being 9 misclassified as never users. Is that right? 10 A. Yes. 11 Q. So, again, when the study supports your 12 opinion, you recognize that the vast majority of 13 perineal talc users begin that use well before 14 age 63. 15 MS. PARFITT: Objection. Misstates 16 testimony. 17 A. I don't recognize that. How do I 18 recognize that? I'm just citing that, in Gates, 19 they provided that opinion. Yeah. 20 In the Gates study, they quoted data from 21 the NECC, that's one study that provides. I 22 don't know what's happening in the -- in this 23 Houghton study, that vast majority. That's 24 something that you are providing. And you 25 provide data that the vast majority of users</p>
<p>1 right? 2 A. Yes. 3 Q. Houghton did not find a statistically 4 significant increase in the risk of ovarian 5 cancer with use of talcum powder on sanitary 6 napkins or diaphragms; is that right? 7 A. Yeah. They found an increased risk 8 which was not statistically significant. 9 Q. And Houghton 2014 did not find a 10 statistically significant increase in risk of 11 ovarian cancer with increasing durations of use 12 or when stratified by age or tubal ligation 13 status; correct? 14 MS. PARFITT: Objection. Form. 15 A. I don't know that specific. I mean, 16 you'd have to show me. Again, I don't remember 17 these studies offhand. 18 Q. Like the Nurses' Health Study, the 19 Houghton 2014 authors ask participants about 20 their talcum powder use at the participants' 21 entry into the study; is that right? 22 A. Yes. And they don't update during a 23 follow-up, introducing, you know, bias. 24 Q. On Page 50 of your report, second 25 paragraph, you note that the average age of the</p>	<p>1 began -- 2 Q. It's something you cited in your 3 report; correct? 4 A. Yeah. But it doesn't mean that that 5 applies to, you know, this Houghton study as 6 well. 7 Q. And that's my point. You take a piece 8 of information in terms of when women begin their 9 talc use. You apply it differently in your 10 analysis of studies that favor plaintiffs' 11 position than studies that do not favor 12 plaintiffs' position? 13 A. I'm sorry. I have to object. 14 MS. PARFITT: Objection. 15 A. I have to object. This is a 16 mischaracterization of my testimony. I mean, I 17 have to object to this. Because -- no, I have 18 to. 19 MS. PARFITT: Let him finish. Let 20 him -- 21 A. Because you are mischaracterizing my 22 testimony. 23 Yes, I point out the limitations in one 24 section that, you know, a majority of women. And 25 I also point out the unidirectional change bias,</p>

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<p>1 and both are entirely congruent with each other. 2 But yes -- 3 Q. Tell -- 4 A. Yes. 5 Q. Are you finished? 6 A. Yes. 7 Q. All right. On what are you relying to 8 opine that enough women begin talcum powder use 9 in their 50s and 60s such that the results of 10 Houghton or Gates 2000 are biased toward the 11 null? 12 A. Well, I mean, we know -- exactly. I 13 mean, we don't know that. I mean, we can't -- 14 even a small amount, and that's important to 15 know, that even a small amount of users was 16 class- -- because we didn't ask those questions. 17 So even a small amount of users who had moved to 18 the other category would have nullified -- you 19 know, would have biased it towards the null. 20 Q. Based on all your review, the data that 21 you came across and that you cite in your report, 22 are that the vast majority of women begin talc 23 use in their 20s or earlier; correct? 24 A. No. I cite that in the NECC. That's 25 the data I came across. And that's why it is</p>	<p>1 MR. ZELLERS: So I'll ask just a few 2 questions about this study -- 3 MS. PARFITT: And if it's not here -- 4 MR. ZELLERS: -- then we'll take a 5 break, because we've been going for a while. 6 (Article entitled "Perineal Talc 7 Use and Ovarian Cancer, A Systematic Review 8 and Meta-Analysis" marked Exhibit 23.) 9 BY MR. ZELLERS: 10 Q. Doctor -- 11 A. I think we need a break in five 12 minutes. I need a break. I don't know about 13 you. 14 Q. We don't want to wear you out. 15 A. It's only half. Not even half the way. 16 Q. I'm handing you Exhibit 23. This is 17 the Penninkilampi meta-analysis that you have 18 referred to in your report and also in your 19 testimony; is that right? 20 A. Yes. 21 Q. You rely on this meta-analysis, 22 Deposition Exhibit 23, in forming your opinions; 23 is that right? 24 A. As one of the studies. Yes. 25 Q. It's a 2018 meta-analysis; is that</p>
<p>1 cited. So to mischaracterize it as not being 2 cited is incorrect. 3 Q. What is the latency period for ovarian 4 cancer? 5 A. I don't know a specific number. It's, 6 you know, several years. 7 Q. Several years. 8 That's your testimony based upon all of the 9 data and material you've reviewed? 10 A. Yes. I mean -- 11 MS. PARFITT: Objection. 12 Q. You've -- you've been referring to 13 Penninkilampi; is that right? 14 A. I don't know the name. Yes. 15 Q. But let me give it to you and we can 16 both see if we can pronounce it together. 17 MS. PARFITT: Before we start, it's 18 about 12:20. We do have lunch coming. May I 19 just take two minutes to see if it's here? 20 MR. ZELLERS: Sure. Or you can let me 21 ask a couple of questions about this study and we 22 can take a break, but whatever your preference 23 is. 24 MS. PARFITT: What's your preference? 25 THE WITNESS: Let's do it.</p>	<p>1 right? 2 A. Yes. 3 Q. Are you aware that this meta-analysis 4 by Penninkilampi does not include the Gates 2010 5 update of the Nurses' Health Study? 6 A. When you say the Gates 2002 -- the 7 study that we -- 8 Q. What we looked at before was Gates 9 2008. And we also looked at Gertig 2000 -- 10 A. All these different studies. 11 Q. That's all right. 12 You're aware that there are several 13 different cohort studies relating to the Nurses' 14 Health Study; is that right? 15 A. Yes. 16 Q. What we talked about earlier was the 17 Gertig 2000 study. 18 A. Okay. 19 Q. Correct? 20 A. Yes. And before that, we talked 21 about -- 22 Q. The Gates 2008. 23 A. Okay. 24 Q. Are you aware that Gates, in 2010, 25 updated the Nurses' Health Study, which we have</p>

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<p>1 referred to as Gertig 2000?</p> <p>2 A. Yeah. I have. It's cited in my report</p> <p>3 as well, 92.</p> <p>4 Q. Are you aware that Penninkilampi does</p> <p>5 not include the Gates 2010 update of the Nurses'</p> <p>6 Health Study?</p> <p>7 MS. PARFITT: Refer to your --</p> <p>8 A. Can I take a look?</p> <p>9 MS. PARFITT: Of course, you can.</p> <p>10 Q. Sure.</p> <p>11 A. Yeah. It cites Gertig.</p> <p>12 Q. But it does not cite Gates 2010; is</p> <p>13 that right?</p> <p>14 A. I don't see it.</p> <p>15 Q. Do you weigh this study, the</p> <p>16 meta-analysis by Penninkilampi, less because it</p> <p>17 does not include the Gates 2010 study?</p> <p>18 A. I mean, all of these meta-analyses,</p> <p>19 most of them have found, you know, similar odds</p> <p>20 ratio. You know, some of them have made</p> <p>21 different decisions.</p> <p>22 They have made -- for example, they made</p> <p>23 decisions about more than 50 cases. Other -- if</p> <p>24 you look at the Taher meta-analysis, they</p> <p>25 decided, based on -- that a New Castle Tawas</p>	<p>1 So I think it's quite reliable and, you</p> <p>2 know, they were justified. They said we're going</p> <p>3 to look at case control with more than 50 cases.</p> <p>4 So I don't consider it unreliable for that</p> <p>5 reason.</p> <p>6 MR. ZELLERS: Let's take a break.</p> <p>7 THE VIDEOGRAPHER: Here ends Media</p> <p>8 No. 2. Off the record, 12:24 p.m.</p> <p>9 (Lunch recess was taken.)</p> <p>10 THE VIDEOGRAPHER: Here begins media</p> <p>11 No. 3 in today's deposition of Sonal Singh, MD,</p> <p>12 M.P.H. Back on the record, 1:02 p.m.</p> <p>13 BY MR. ZELLERS:</p> <p>14 Q. Dr. Singh, another Bradford Hill</p> <p>15 overview factor that you considered is</p> <p>16 dose-response; is that right?</p> <p>17 A. Yes.</p> <p>18 Q. Which studies show a dose-response?</p> <p>19 A. Let me just refer to my report.</p> <p>20 So in -- you know, in assessing</p> <p>21 dose-response, it's very challenging with an</p> <p>22 exposure such as perineal talc, particularly</p> <p>23 because, you know, you need to know the amount,</p> <p>24 you need to know the duration, you need to know</p> <p>25 the intensity of exposure. So there are</p>
<p>1 Skill Rating will include studies.</p> <p>2 So you have to review that. Just because</p> <p>3 they excluded Gates 2010, I wouldn't weigh it</p> <p>4 differently. That's my answer.</p> <p>5 Q. Gates 2010 tends to negate an</p> <p>6 association between perineal talc use and ovarian</p> <p>7 cancer; correct?</p> <p>8 MS. PARFITT: Objection. Misstates the</p> <p>9 evidence.</p> <p>10 A. So negates the evidence? I mean, in</p> <p>11 fact, if you look at influence analyses conducted</p> <p>12 by Taher, it sort of doesn't matter which study</p> <p>13 you take out and which study you take in. All of</p> <p>14 the estimates are statistically significant.</p> <p>15 Q. If you're going to do a reliable</p> <p>16 meta-analysis, you should include the pertinent</p> <p>17 studies; correct?</p> <p>18 MS. PARFITT: Objection. Misstates his</p> <p>19 testimony.</p> <p>20 A. Just give me a second.</p> <p>21 Yeah. I mean, you have to include the</p> <p>22 permanent study -- but as we know, as we know,</p> <p>23 people have made different decisions, like Taher</p> <p>24 made separate decisions, Berge has made</p> <p>25 separate -- the previous analysis made.</p>	<p>1 challenges.</p> <p>2 The second is the challenge of modeling</p> <p>3 dose-response. When we say dose-response -- or</p> <p>4 exposure outcome, is it linear monotonic</p> <p>5 relationships?</p> <p>6 And, you know, several studies, some measure</p> <p>7 duration, some measure intensity, some measure</p> <p>8 duration and frequency. So as I cite in my</p> <p>9 dose-response section, which I'm trying to</p> <p>10 find -- I'm sorry -- yeah, Page 56 of my report.</p> <p>11 Q. Which studies show a dose-response?</p> <p>12 A. I mean, this is, you know,</p> <p>13 references -- with increased frequency, 51 to 55.</p> <p>14 Duration, 52 to 54. Frequency and duration,</p> <p>15 58 -- 48 to 54.</p> <p>16 Q. Doctor, which studies did you review</p> <p>17 that show a dose-response?</p> <p>18 A. These are the studies that I cited.</p> <p>19 Q. What page are you looking at?</p> <p>20 A. Page 56.</p> <p>21 Q. Are there studies that do not show a</p> <p>22 dose-response?</p> <p>23 A. Yes.</p> <p>24 Q. Do you cite those studies that do not</p> <p>25 show a dose-response in your report?</p>

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<p>1 A. Yes, I do. 2 Q. On what page? 3 A. Just give me a second. I know I have 4 cited them, and I'm just trying to find where. 5 Yeah. None of the cohort studies were able 6 to conduct meaningful dose-response because they 7 did not collect durational. 8 Q. Are those the only studies, the cohort 9 studies that did not find a meaningful 10 dose-response? 11 A. No. There were several -- 12 MS. PARFITT: Objection to form. 13 A. There were other case-control studies. 14 No. If you take out 41, 55 -- I mean, these 15 references cite above -- that are, you know, 16 included in the sections, and I talk about their 17 dose-response in the respective section. 18 Q. What is your justification for 19 disregarding the studies that did not show a 20 dose-response? 21 MS. PARFITT: Objection. Form. 22 A. So I did not disregard these studies. 23 They are included in the report. So, obviously, 24 the cohort studies already are, and we can go 25 through the case-control studies, which did not</p>	<p>1 Q. On 337, there's a table that shows the 2 risk of ovarian cancer for women who used talc 3 daily for one year, one to five years, five to 20 4 years, and more than 20 years. Is that right? 5 A. Yes. 6 Q. There was only statistical significance 7 for the time periods of one to five years of use 8 and more than 20 years of use; correct? 9 A. Yes. 10 Q. If there is a dose-response, shouldn't 11 there continue to be statistical significance 12 with increased exposure? 13 MS. PARFITT: Objection. Form. 14 A. Yeah. So that is -- I'm just 15 concluding what they concluded. The trend for 16 frequency of use was significant, but the trend 17 for use -- years use was flat. And if you look 18 at Page 337, the last line of that paragraph, 19 "Even with this imprecision, the trend remained, 20 although the increase was less monotonic." 21 Q. When we look at the data, there is only 22 a dose-response -- strike that. 23 The data only shows statistical significance 24 for one to five years of use. It does not show 25 statistical significance for one year or five to</p>
<p style="text-align: center;">Page 179</p> <p>1 show dose-response and are included. 2 Q. One of the studies you reviewed and 3 considered and relied upon was the Cramer 2016 4 study; is that right? 5 A. Yeah. 6 (Article entitled "The 7 Association Between Talc Use and Ovarian 8 Cancer, A Retrospective Case-Control Study 9 in Two US States" marked Exhibit 24.) 10 BY MR. ZELLERS: 11 Q. Exhibit 24 is the Cramer 2016 study; 12 correct? 13 A. Yes. 14 Q. This is a retrospective case-control 15 study published in 2016; is that right? 16 A. Yes. 17 Q. You claim in your report that this 18 study shows a trend for increasing risk by talc 19 years on Page 46, the last paragraph; is that 20 right? 21 A. Yes. 22 Q. Let's take a look at whatever the study 23 shows. Turn to Page 337 of Exhibit 24, the 24 Cramer 2016 study. 25 A. 337? Yes.</p>	<p style="text-align: center;">Page 181</p> <p>1 20 years; correct? 2 MS. PARFITT: Objection. Misstates the 3 evidence. 4 A. Yeah. So let's go to -- 5 Q. Is that correct? 6 MS. PARFITT: Objection. 7 A. Yes. But let's go to the section of my 8 testimony in which -- report which discusses how 9 dose-response analysis should be interpreted, 10 because they lose statistical power. So subgroup 11 tests lose statistical significance, and I'll 12 point out -- 13 Q. You -- 14 MS. PARFITT: Excuse me. I think he's 15 still -- 16 A. Yeah. I'm trying to explain something. 17 Yeah. We are talking on the subject of 18 dose-response. And one must be careful in 19 interpreting data from the subgroup analysis such 20 as analysis of dose categories or, you know, as 21 subgroups. The results are important. If the 22 test is not significant, there's lack of 23 significant difference. However, such subgroup 24 tests can be underpowered because of reduction in 25 sample size.</p>

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<p>1 Q. Doctor, if there is a dose-response in 2 a study such as the Cramer 2016 paper, looking at 3 the data, shouldn't there continue to be 4 statistical significance with increased exposure? 5 MS. PARFITT: Objection. 6 A. No, no, you don't -- it doesn't have to 7 be statistical significance with, you know, 8 increased exposure. I mean, you look at the test 9 score interaction. 10 So I don't think that, with each category of 11 exposure, you're already -- you have a power for 12 a study. Now with each, you're decreasing the 13 number of users, so you're not going to get 14 statistical significance. 15 Q. Then why do you get statistical 16 significance at greater than 20 years of daily 17 use? 18 A. Yeah. Because there's differential, 19 you know -- at that point, you know, there's 20 more -- there's, you know, more case subjects 21 have ovarian cancer. 22 Q. Why do you not have statistical 23 significance at five to 20 years? 24 A. Because it's underpowered at that time. 25 Q. Why do you not have statistical</p>	<p>1 that testing to determine how much talcum powder 2 reaches a woman's ovary after each application. 3 Q. Do you have any idea how much asbestos 4 reaches a woman's ovaries each time she uses 5 talc, assuming that talc powder is contaminated 6 with asbestos? 7 MS. PARFITT: Objection. Form. 8 A. I have not conducted that assessment. 9 Q. How much heavy metal exposure reaches a 10 woman's ovaries, assuming that there are heavy 11 metals in talcum powder? 12 MS. PARFITT: Objection. Form. 13 A. I have not conducted that assessment. 14 Q. Do you know that heavy metals, 15 chromium, cobalt and nickel, are in vitamins? 16 A. Yeah. They are in, you know -- they 17 are ubiquitous in various other areas as well. 18 Q. They're in food; right? 19 A. I don't know which one is in which. 20 Yeah. I can't be specific. 21 Q. In drinking water? 22 A. I don't know. I don't want to say yes 23 to whichever. 24 Q. It's in bottled water? 25 A. I don't know that.</p>
<p>1 significance at one year? 2 A. It's underpowered. 3 Q. But it is appropriately powered at one 4 to five years? 5 A. Yes. Based on the number of cases. 6 Q. Isn't this an instance where you're 7 cherry-picking the data that is favorable to 8 plaintiffs' position and ignoring all of the data 9 which would tend to refute plaintiffs' position? 10 MS. PARFITT: Objection. Form. 11 A. I don't know what the plaintiffs' 12 position -- but what I'm trying to say is this 13 is -- my interpretation of dose-response is based 14 on, you know, not based on statistical 15 significance. So that's all. 16 Q. Which studies show a dose-response for 17 asbestos exposure and ovarian cancer? 18 A. I have not evaluated the causal link 19 between asbestos and ovarian cancer. Other 20 agencies have, and they have opined that it 21 causes ovarian cancer. But I have not. 22 Q. Do you have any idea how much talcum 23 powder reaches a woman's ovaries each time she 24 uses it? 25 A. I have not conducted that -- conducted</p>	<p>1 Q. Are heavy metals, chromium, cobalt and 2 nickel, considered essential nutrients in the 3 body? 4 MS. PARFITT: Objection. 5 A. Yeah. I mean, that's, you know, 6 it's -- pertaining to this case, the question is 7 not that, whether they are in drinking water. 8 I asked myself this question, causal 9 question, what constitutes talcum powder 10 products. And to that effect, if there are 11 substances such as, you know, chromium, cobalt, 12 and other heavy metals that have been, you know, 13 classified as Grade I or Grade II carcinogens 14 that provide further evidence of a causal link, 15 whether they are present in air, ambient air, 16 that's not the assessment I've done, and I'm not 17 making a causal claim that chromium, per se, is 18 causing that ovarian cancer in that causal 19 framework. 20 Q. You have no evidence whatsoever that 21 the blood or tissue levels of any trace heavy 22 metals are higher in genital talc users compared 23 to nonusers; correct? 24 MS. PARFITT: Objection. Form. 25 A. Blood or genital talc. I'm sorry. Can</p>

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<p>1 you repeat?</p> <p>2 Q. Sure. I'll ask it again.</p> <p>3 You have no evidence that the blood or</p> <p>4 tissue levels of any trace heavy metals are</p> <p>5 higher in genital talc users compared to</p> <p>6 nonusers; correct?</p> <p>7 MS. PARFITT: Objection. Form.</p> <p>8 A. Yeah. But I do know that there is</p> <p>9 perineal talc application, and at least from the</p> <p>10 documents I have reviewed, that, you know,</p> <p>11 asbestos is present in talc, at least from the</p> <p>12 documents I've reviewed, from the studies that</p> <p>13 I've reviewed, and from a -- as you say, the</p> <p>14 excerpts of the deposition.</p> <p>15 And, you know, whether these are in blood</p> <p>16 levels or, as you said, in the uterine tissue,</p> <p>17 no, I don't know that.</p> <p>18 Q. Another Bradford Hill overview factor</p> <p>19 is biological plausibility; right?</p> <p>20 A. Well, it's actually plausibility.</p> <p>21 Q. Plausibility means that a biological</p> <p>22 mechanism exists; correct?</p> <p>23 A. Well, that's what we mean. But if you</p> <p>24 actually go back and read Bradford Hill, he was</p> <p>25 talking even about social factors. Yes, but, you</p>	<p>1 infer from whatever the biological evidence that</p> <p>2 I've reviewed, that there's, you know, evidence</p> <p>3 that supports biologic probability. There are</p> <p>4 some studies that, you know, don't support that</p> <p>5 claim.</p> <p>6 Q. My question simply was if you defer to</p> <p>7 other experts on the topic of biologic</p> <p>8 plausibility.</p> <p>9 MS. PARFITT: Objection.</p> <p>10 Q. You do; correct?</p> <p>11 MS. PARFITT: Objection. That's not</p> <p>12 his testimony.</p> <p>13 A. I won't just defer to them. I'm just</p> <p>14 providing my own opinion. Yeah. I mean, they</p> <p>15 can provide -- you know, it depends. If it's a</p> <p>16 plaintiff expert, a defense expert. I mean, how</p> <p>17 do I know? I can't defer to somebody without</p> <p>18 reading their opinion; right?</p> <p>19 Q. Is all ovarian cancer caused by the</p> <p>20 same mechanism?</p> <p>21 A. No. And neither is any kind of cancer.</p> <p>22 Q. Different subtypes of cancer have</p> <p>23 different biological mechanisms; correct?</p> <p>24 A. Yes. But we are dealing with biologic</p> <p>25 plausibility.</p>
<p style="text-align: center;">Page 187</p> <p>1 know, we've gone forward and interpreted that as</p> <p>2 biologic plausibility.</p> <p>3 Q. The biological mechanisms of cancer are</p> <p>4 not your area of expertise; is that right?</p> <p>5 MS. PARFITT: Objection.</p> <p>6 A. Yes. But, again, the question for me</p> <p>7 was not, you know, to elucidate every precise</p> <p>8 step either in the occurrence of ovarian cancer</p> <p>9 or the talc installation into the development.</p> <p>10 The precise question was, you know, the</p> <p>11 epidemiology shows these findings. Whatever is</p> <p>12 the data in biology, does it support or does it</p> <p>13 refute, you know, these findings in epidemiology?</p> <p>14 Q. On that topic, biologic plausibility,</p> <p>15 you defer to other experts; is that right?</p> <p>16 MS. PARFITT: Objection.</p> <p>17 A. Yeah. I would defer to other people</p> <p>18 for more details on, you know, precise mechanisms</p> <p>19 of ovarian cancer.</p> <p>20 But I do have -- and I'm an epidemiologist.</p> <p>21 I mean, I can't -- so that's why I just can't</p> <p>22 look at whether it's Cramer or Penninkilampi or</p> <p>23 Berge in isolation. We have to look at the whole</p> <p>24 evidence, including epidemiology, including --</p> <p>25 but, yes, I can -- I have that experience to</p>	<p style="text-align: center;">Page 189</p> <p>1 Again, I don't need to know the precise</p> <p>2 biological mechanisms to arrive at a causal</p> <p>3 opinion.</p> <p>4 Q. If talc is associated with all subtypes</p> <p>5 of epithelial ovarian cancer, or with different</p> <p>6 subtypes in different studies, doesn't that</p> <p>7 suggest that the association is by chance?</p> <p>8 MS. PARFITT: Objection. Misstates the</p> <p>9 evidence.</p> <p>10 A. I mean, again, I don't know enough</p> <p>11 details about the biologic plausibility of each</p> <p>12 ovarian cancer subtype to say that, you know,</p> <p>13 talc would be, by chance, alone. I'd defer to,</p> <p>14 you know, people who evaluate these.</p> <p>15 Q. There is no one biological mechanism</p> <p>16 that could tie all of these subtypes together, is</p> <p>17 there?</p> <p>18 A. I will defer to people with more</p> <p>19 experience. I don't know that. What I know is</p> <p>20 biological plausibility mechanisms that inform</p> <p>21 the hypothesis that I was looking at.</p> <p>22 Q. How does talc reach the ovaries?</p> <p>23 A. Well, you know, talc migrates from, you</p> <p>24 know -- my understanding and opinion is that, you</p> <p>25 know, perineal application of talc, you know,</p>

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<p>1 migrates upwards and upwards through the, you 2 know, vaginal canal and migrates to. 3 Q. Is that an area of your expertise? 4 A. Again, no. But I have reviewed the 5 studies, several studies that -- some studies 6 that I cite, several studies that were added. 7 And it's quite well accepted, at least in the 8 gynecological community, that there's, you know, 9 particulate matter can migrate upwards. 10 Q. What studies support the theory that 11 talcum powder applied externally migrates from 12 the perineal region to the ovaries? 13 A. Again, I reviewed various studies on 14 migration. 15 Q. Can you name them for me? 16 A. I'm going to look at it. 17 Yeah. So I cite several studies in this 18 section on migration. And, again, this in the 19 context of biologic plausibility. Is it 20 plausible that particulate matter, such as talc, 21 can migrate? And, again -- 22 Q. What page are you looking at? 23 A. Sorry. 57. 24 Q. What studies are you relying on? 25 A. Yeah. So I'm relying on the studies</p>	<p>1 A. Yeah. I know that. 2 Q. Ness is an expert for plaintiffs in the 3 talc litigation; is that right? 4 MS. PARFITT: Objection. 5 A. I'm not aware of that. 6 Q. So Justin, that dealt with glove 7 powder; is that right? 8 A. Which one was that, 68? 9 Q. 68. 10 A. Yes. 11 Q. Isn't it true that that study did not 12 involve perineal use, but an exam with force to 13 the cervix? 14 A. Yeah. You know, and I'm relying on it, 15 again, for biologic plausibility. It does not 16 involve talc. So, you know, it's glove powder 17 in -- 18 Q. Isn't it true that they found some 19 particles in women who were examined with 20 powder-free gloves? 21 A. Yes. 22 Q. Heller, didn't Heller find talc in 23 tissues in all 24 patients, including the 12 who 24 did not use perineal talc? 25 A. Yes.</p>
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<p>1 described by, you know, Heller, 64. 2 Q. Any others? 3 A. 65. 4 Q. What is 65? 5 A. I'll have to go take a look. 6 It's Henderson, I think, but I don't want 7 to -- these are big documents. Yeah, it is 8 Henderson. 9 And then 66 is presence of talc in lymph 10 nodes and then -- 11 Q. Who is the author? 12 A. Cramer. 13 And then supportive evidence of migration of 14 other, you know, particulate matter comes from, 15 you know, 68, 87 and -- 16 Q. 68 is what? 17 A. 68 is Justin. 18 Q. Eighty -- is it -- 87 is what? 19 A. Ness. 20 Q. Is who? 21 A. Ness. Ness 2000. 22 Q. Cramer is a litigation consultant and 23 expert for plaintiffs in the talc litigation; is 24 that right? 25 MS. PARFITT: Objection.</p>	<p>1 Q. What is the evidence in the ovarian 2 tissues that have been studied of granulomatous 3 reaction which is what you would see if there was 4 a huge amount of talc? 5 A. Well, I mean, I'm not opining that 6 there is a huge amount of talc, but others have 7 found talc in the ovaries. I am just -- my 8 opinion is that it is biologically plausible. I 9 mean, you know, the FDA has stated that it is 10 biologically plausible for particles, retrograde 11 particles to migrate. 12 And so I'm opining on that. I'm not saying 13 that talc is in the ovaries and it's inducing 14 this granulomatous reaction. I mean, these 15 people have found that it can occur. 16 And this is sufficient evidence for my 17 opinion to support on biologic plausibility. 18 Other studies, which I cite in my report, 19 which, you know, for example, monkey models, 20 couldn't, you know detect -- didn't detect 21 translocation. So there are studies that don't. 22 Q. Can you cite any article that shows 23 granulomas, fibrosis, or adhesions anywhere up 24 the reproductive tract of a woman as a result of 25 her external genital talc application?</p>

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<p>1 MS. PARFITT: Objection. Form. 2 A. I did not review those studies, if 3 there are. 4 Q. In your report, you say that, "The 5 migration theory is supported by findings of a 6 deceased risk" -- strike that. 7 In your report, you say that, "The migration 8 theory is supported by findings of a decreased 9 risk of ovarian cancer with tubal ligation and 10 hysterectomy." Pages 18 and 19. 11 Is that right? 12 A. Yes. 13 Q. Don't the studies pertaining to tubal 14 ligation show mixed results? 15 A. No. 16 MS. PARFITT: Objection. 17 A. As far as -- 18 MS. PARFITT: Sorry. 19 A. I mean, as far as I'm aware, you know, 20 tubal ligation and hysterectomy are protective 21 risk factors for ovarian cancer. 22 Q. That's your opinion based upon your 23 review and analysis of the literature; is that 24 right? 25 A. Yeah.</p>	<p>1 history of breast cancer, had a tubal ligation or 2 hysterectomy, were pre-menopausal or were 3 post-menopausal and used HT." 4 Is that correct? 5 A. Yeah. 6 Q. So, in fact, Cramer did find a 7 significantly greater association between talcum 8 powder use and ovarian cancer for women who had a 9 tubal ligation; is that right? 10 A. Yeah. But my -- my point, in Page 57, 11 is that, you know, first of all, that's more than 12 just one Cramer. There are several studies that 13 -- in inferring biologic plausibility, tubal 14 ligation and hysterectomy are protective of 15 ovarian cancer. It is not that talc in this had 16 a higher risk among those. 17 I mean, those, again, those are not two 18 incongruent arguments. I mean, Cramer is making 19 a separate argument that, in his study, he found 20 a higher risk among those who had tubal ligation 21 or hysterectomy. 22 Q. If you're correct in the opinion that 23 you set forth in your report, you would have 24 expected the Cramer study to show a decreased 25 risk of ovarian cancer for women who had tubal</p>
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<p>1 Q. Take a look at the Cramer article that 2 we referred to before, Exhibit 24. This is 3 Cramer 2016. 4 Do you have that in front of you? 5 A. Oh, my copy? 6 Q. Yes. You have a copy. 7 A. Yes. Which page? 8 Q. Take a look -- well, Cramer found a 9 significantly greater association between talcum 10 powder use and ovarian cancer for women who had a 11 tubal ligation or hysterectomy. Isn't that true? 12 A. Where is that? 13 Q. Look at the bottom of Page 337 of 14 Exhibit 24 to the top of page -- look at 337. 15 A. And which table? 16 Q. I'm sorry. Look at the bottom of 17 Page 337, that carries over to the top of Page 18 339. This is Cramer describing his results; is 19 that right? 20 A. Yes. 21 Q. Tell me if I'm reading this correctly, 22 and I'm starting at the bottom of Page 337. 23 "By test for interaction, Column 3, the 24 association was significantly greater for women 25 who were African American, had no personal</p>	<p>1 ligation or hysterectomy; correct? 2 MS. PARFITT: Objection. Form. 3 Misstates his testimony. 4 A. Yeah. I mean, I don't -- I mean, 5 that's probably, in that study. Yeah. 6 Q. How do you account for the fact that 7 Cramer and the authors of this 2016 paper found a 8 significantly greater association among women who 9 had a tubal ligation or hysterectomy? 10 A. I have no -- you know, you can find 11 different studies have different findings, but, 12 overall, we know that tubal ligation and 13 hysterectomy are protective. 14 Q. The Gertig 2000 Nurses' Health Study, 15 that's also a study that you have reviewed; is 16 that right? 17 A. Yes. 18 Q. That study did not show a reduction of 19 ovarian cancer in talc users who have had a tubal 20 ligation; correct? 21 A. Which page is that? 22 Q. I'm just asking, based upon your review 23 of that study. 24 A. I can't answer. You know, there are so many different -- can I ask for the Taher</p>

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<p>1 appendix, because that actually breaks it down by 2 tubal ligation and hysterectomy. 3 You're asking very specific questions. I 4 need to have specific materials. 5 MR. TISI: I have them. 6 Q. What are you asking for? 7 A. You asked a question about tubal 8 ligation. 9 Q. I understand. What are you asking 10 counsel for plaintiffs to get you? 11 A. The Taher appendix. 12 Q. You want to go back and look at the 13 Taher -- 14 A. Appendix. Because they did stratify 15 the analysis by hysterectomy and tubal ligation. 16 Q. That's the 2018, unpublished paper; is 17 that right? 18 A. Yes. 19 Q. All right. Did the Houghton -- as 20 they're looking for this -- 21 A. Yeah. Sure. 22 Q. Did the Houghton two thousand -- strike 23 that. 24 The Houghton 2014 study also did not show a 25 reduction of ovarian cancer in talc users who</p>	<p>1 talc users who had a tubal ligation; correct? 2 A. I mean, I think I need to look at the 3 data. I think -- I don't have it. We are trying 4 to get it, so we'll have to wait. 5 I mean, you're asking me questions. I mean, 6 you have to show me documents. I mean -- 7 Q. Well, you made a statement in your 8 report -- 9 A. How can I make a statement in the 10 report around Taher, because it wasn't even 11 available at that time? 12 Q. What I'm trying to do is ask you -- 13 A. Sure. 14 Q. -- about the statement in your report, 15 where you say that, "Migration theory is 16 supported by findings of a decreased risk of 17 ovarian cancer with tubal ligation and 18 hysterectomy." 19 A. And I'm just stating that I just need 20 to look at a figure in the Taher appendix and 21 then I'll be able to answer that. That's all. 22 Q. Well, we saw that Cramer doesn't show 23 that; right? 24 A. Yes. 25 Q. You're not aware that Gertig 2000 or</p>
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<p>1 have had tubal ligation; correct? 2 A. Again, you know, I don't want to agree 3 or disagree with you without just looking at it. 4 I don't think I comment on it. 5 Q. Would you agree or can you agree that 6 both Gertig 2000 and Houghton 2014 were large 7 prospective cohort studies; right? 8 A. Yeah. But we've already discussed 9 their limitation in terms of they were not 10 designed to study the talc ovarian cancer. They 11 had prevalent user biases. You know, they lost a 12 lot of users and cases of ovarian cancer. You 13 know, they had misclassification. 14 And, yes, they were large studies, but had 15 small number of ovarian cancer cases. 16 MR. KLATT: Objection. Nonresponsive. 17 MR. ZELLERS: Join. 18 Q. You read the Ter Riet 2013 19 meta-analysis; is that right? 20 A. Yes. 21 Q. You rely on that; correct? 22 A. Yes. 23 MS. PARFITT: Objection. 24 Q. The Ter Riet 2013 meta-analysis also 25 did not show a reduction of ovarian cancer in</p>	<p>1 Houghton 2014 shows that. Are you? 2 MS. PARFITT: Objection. Misstates his 3 testimony. 4 A. You have not shown me that. You have 5 not shown me documents to say one way or the 6 other. 7 Q. When you did your analysis, didn't you 8 look at the studies to try to see if they 9 supported or refuted the points you were making? 10 A. I -- you know, I did not look at every 11 subanalysis by, you know -- by whether it's, you 12 know, pre-menopausal, post-menopausal. 13 Q. You cite Cramer 2016 as supportive of 14 your position and opinions. 15 A. Sure. 16 Q. Is that right? 17 A. Well, again -- 18 MS. PARFITT: Objection. Mis -- 19 A. I don't. 20 MS. PARFITT: Let me get my objection 21 in. 22 THE WITNESS: Sorry. Go ahead. 23 MS. PARFITT: No. My objection is in, 24 I think. 25 Q. But then you ignore those portions or</p>

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<p>1 parts of Cramer 2016, Gertig 2000, Houghton 2014, 2 Ter Riet 2013, Rosenblatt 2011, Wong 1999, Cook 3 1997, Harlow 1992, that don't support your 4 position.</p> <p>5 MS. PARFITT: Counsel completely 6 misstates his opinion. The question misstates --</p> <p>7 A. I don't even know what was the 8 question, and I can't answer that because I don't 9 know what the question was.</p> <p>10 Q. The question is: When you opined in 11 your report that the migration theory is 12 supported by findings of a decreased risk of 13 ovarian cancer with tubal ligation and 14 hysterectomy, did you pick out just a couple of 15 cases to look at and cite or did you try to see 16 if there was consistency to that finding across 17 all of the studies?</p> <p>18 A. Yeah. So when I cite that, and you can 19 see the citation, I am trying to make an 20 inference about separate from talc use, and 21 ovarian cancer, you know, is hysterectomy and 22 tubal ligation protective of that.</p> <p>23 So that's the inference. It's not that each 24 of these studies, I'm trying to ignore, you know, 25 the studies that you mentioned. I'm just trying</p>	<p>1 by findings of a decreased risk of ovarian cancer 2 with tubal ligation and hysterectomy.</p> <p>3 A. Yeah. But it doesn't talk about, you 4 know -- so if you look at the reference, in 5 case-control studies and meta-analysis, let's 6 look at the references. You know, so, yes, 7 there's one. And if -- let's look at --</p> <p>8 Q. Okay. Can you cite one reference?</p> <p>9 A. Yeah. Let's look at that.</p> <p>10 Q. All right.</p> <p>11 A. Then let's look at 115. So when I cite 12 115, that's not even about talc. That's about 13 tubal ligation and hysterectomy, in general, is 14 it -- you know, so taking talc out of the 15 equation, I'm trying to opine or understand 16 whether tubal ligation and hysterectomy are 17 protective factors, and then I can infer on talc, 18 yes, should only Ness have been cited? Yes, 19 there are other studies otherwise.</p> <p>20 Q. And there are other studies, many 21 studies --</p> <p>22 A. Yes.</p> <p>23 Q. -- that do not support your position; 24 is that right?</p> <p>25 MS. PARFITT: Objection. Form. His</p>
<p>1 to say, as you're looking at mechanisms, what 2 would happen with tubal -- I'm trying to do the 3 best to explain, tubal ligation and ovarian 4 cancer.</p> <p>5 If, in the individual studies, yes, as in 6 Cramer, and if we see that in the other studies, 7 then, you know, they provide a different opinion. 8 But I'm trying to make an opinion, based on the 9 general knowledge of tubal ligation and 10 hysterectomy being, you know, protective.</p> <p>11 Q. Do you agree with me, to have a 12 scientifically valid opinion --</p> <p>13 A. Sure.</p> <p>14 Q. -- you need to look at all of or at 15 least the important studies; correct?</p> <p>16 A. Yeah. I did look at these studies.</p> <p>17 Q. And, in fact, a number of the studies 18 that you cite in your report --</p> <p>19 A. Sure.</p> <p>20 Q. -- don't support your position; 21 correct?</p> <p>22 MS. PARFITT: Objection. Form. 23 Support his position on tubal ligation?</p> <p>24 Q. Well, right now, we're talking about 25 migration, that the migration theory is supported</p>	<p>1 position on tubal ligation?</p> <p>2 MR. ZELLERS: Yes.</p> <p>3 MS. PARFITT: Thank you.</p> <p>4 A. Yeah. So it's -- it's -- I think 5 there's -- I mean, whether Ness and others should 6 have been cited there, that's a valid point. But 7 when I make a point about tubal ligation and 8 hysterectomy, it's a general point on the, you 9 know, migration hypothesis.</p> <p>10 BY MR. ZELLERS:</p> <p>11 Q. You should at least cite to or make 12 some reference --</p> <p>13 A. Yeah.</p> <p>14 Q. -- right, to the studies that do not 15 support that position?</p> <p>16 A. Yeah. And I think that I have made it 17 in the individual sections, and I can try to look 18 for it, but it will take us time there.</p> <p>19 Q. Isn't there evidence that if tubal 20 ligation has a protective effect, the protective 21 effect in ovarian cancer stems from the fact that 22 the ligation procedure itself changes the 23 fallopian tube cells?</p> <p>24 A. I am not an expert --</p> <p>25 MS. PARFITT: Objection.</p>
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<p>1 A. -- in, you know, this area to provide, 2 you know, why it would do that. 3 Q. Did you review or are you familiar with 4 Tiourin, T-I-O-U-R-I-N, a 2015 study? 5 A. Did I cite that? I don't remember. 6 Q. Are you -- is that study familiar to 7 you? 8 A. I just can't remember the names. There 9 are so many studies. If you show it to me, I 10 can -- 11 Q. I'll show it to you. You can tell me 12 if it's familiar to you. And if it's not, I'll 13 move on. 14 (Article entitled "Tubal 15 Ligation Induces Quiescence in the 16 Epithelia of the Fallopian Tube Fimbria" 17 marked Exhibit 25.) 18 MR. ZELLERS: 25 is the -- 19 A. No, it's not. I don't know about. 20 BY MR. ZELLERS: 21 Q. For the record, 25 is a 2015 study by 22 Tiourin, T-I-O-U-R-I-N. 23 That's not a study that you reviewed or 24 considered; is that right? 25 A. You know, I have to go through all the</p>	<p>1 concentration in the rectal, vulvar, vaginal, 2 cervical, and uterine tissues which are closer to 3 the area of the initial exposure; correct? 4 MS. PARFITT: Objection. Misstates his 5 testimony. 6 A. I just don't have an opinion in terms 7 of where it will be high or low. Because that's 8 not my area of expertise. 9 Q. Talc particles should be causing 10 inflammation in all those organs and areas; 11 correct? 12 MS. PARFITT: Objection. 13 A. Again, that's -- that's, you know, I'm 14 opining on biological plausible mechanisms of 15 talc-induced ovarian cancer. I didn't look at, 16 you know, whether it's vaginitis or vulvar or 17 whether it's, you know, rectal inflammation. And 18 that's not my area of expertise again. 19 Q. In fact, there are no studies that show 20 inflammation as a result of genital talc use in 21 any of those areas; correct? 22 MS. PARFITT: Objection. Misstates the 23 evidence. 24 A. Again, I have not -- you know, my 25 testimony and report on talcum powder products</p>
<p>1 references, but I can't recall straight off 2 whether it does. 3 Q. If talcum powder migrates from the 4 perineal region to the ovaries, shouldn't 5 exposure to talc be far greater in concentration 6 in the rectal, vulvar, vaginal, cervical and 7 uterine tissues? 8 MS. PARFITT: Objection to form. 9 Q. Because those are closer to the area of 10 initial exposure? 11 MS. PARFITT: Same objection. 12 A. Yes. So, again, my -- I did not 13 examine, you know, which areas of -- now, as an 14 epidemiologist, I examine general exposures to, 15 you know, products and their associations. 16 Whether, you know, we want to know, yes, route of 17 exposure, whether it's perineal application. 18 But, you know, the evidence that I examined 19 was, you know, I did not distinguish within 20 whether it was perineal or vaginal, vulvar. That 21 would have been different. 22 Q. Let's go step by step. 23 You do agree that if talcum powder migrates 24 from the perineal region to the ovaries, the 25 exposure to talc would be far greater in</p>	<p>1 and inflammation is looking at, are there 2 biological plausible mechanisms. 3 And, again, if there's no studies that 4 provide that talc, in and of itself, causes 5 inflammation, then there are no studies. But, 6 you know, but there's still biologic 7 plausibility. 8 MR. KLATT: Objection. Unresponsive. 9 Q. Are there any studies that you are 10 aware that show a link between external genital 11 talc use and rectal, vulvar, vaginal, cervical, 12 or uterine cancer? 13 MS. PARFITT: Asked and answered. 14 Objection. 15 A. I'm not aware of those. I have not 16 reviewed those studies. 17 Q. As part of your report, you discuss a 18 study published by Huncharik and others in 2007; 19 is that right? 20 A. Yes. Let's bring it out, I mean, if 21 you want to talk about that. 22 Q. I believe it's on Page 26 of your 23 report. 24 A. Sure. 25 Q. Huncharik 2007 is a meta-analysis of</p>

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<p>1 studies on the relationship between ovarian 2 cancer and using diaphragms that are dusted with 3 talcum powder; is that right?</p> <p>4 A. Yes.</p> <p>5 Q. A diaphragm is inserted directly onto a 6 woman's cervix; is that right?</p> <p>7 A. Yes.</p> <p>8 Q. On Page 26 of your report, you say 9 that, "This meta-analysis is flawed because it 10 only focuses on powder-dusted diaphragms"; 11 correct?</p> <p>12 A. Well, no. That's not the only flaw. I 13 mean, there are several other flaws, including 14 exclusion of loss category, data extraction 15 analysis, which is, you know, really inclusion of 16 inability studies that did not disaggregate.</p> <p>17 I mean, the question is if you're asking 18 about perineal exposure, yes, perineal -- 19 diaphragms is one route of exposure. But that's 20 not the only route of exposure that you should be 21 concerned about.</p> <p>22 Q. Do you state in your report, "The most 23 important limitation with the Hunchark 2007 24 meta-analysis was its exclusive focus on talc 25 powder-dusted diaphragms as the route of</p>	<p>1 means that you cannot exclusively focus on one 2 route of exposure. So it does not mean that it 3 cannot in and of itself. You have to look at 4 perineal-dusted diaphragm. You have to look at, 5 other, you know, perineal applications.</p> <p>6 Q. So putting aside inhalation for the 7 moment, your opinion is that talcum powder 8 travels from the perineal region to the ovaries 9 through the woman's reproductive tract; is that 10 right?</p> <p>11 A. I mean, I don't even know through the 12 ovaries. I know it migrates upwards. That's, 13 you know, my opinion.</p> <p>14 Q. So talcum powder must travel past the 15 labia, through the vagina, through the cervix, 16 and then to the uterus; is that right?</p> <p>17 A. Yes. It migrates upwards through the 18 vagina, you know, the tract.</p> <p>19 Q. And then the powder travels through the 20 uterus and into the fallopian tubes to reach the 21 ovaries; is that right?</p> <p>22 A. Well, I mean, I'm not -- again, I don't 23 intend to elucidate, you know, the precise link 24 that a study has shown that talcum powder -- I 25 think we answered this earlier, I answered this</p>
<p style="text-align: center;">Page 211</p> <p>1 exposure, which could not inherently address the 2 causal question of whether genital talcum powder 3 dusting is associated with increased risk of 4 ovarian cancer"?</p> <p>5 Is that what you said?</p> <p>6 MS. PARFITT: Counsel, do you have a 7 copy of the -- otherwise, may I show him the 8 Hunchark study so he's got it in front of him?</p> <p>9 MR. ZELLERS: I'm just asking general 10 questions right now. That was just a question, 11 does he say that in his report. If he needs to 12 review the study, then he can look at the study.</p> <p>13 MS. PARFITT: I would appreciate that.</p> <p>14 MR. ZELLERS: Sure.</p> <p>15 MS. PARFITT: I just didn't want to 16 pass something to him without your permission.</p> <p>17 A. Yeah. I do state that.</p> <p>18 Q. You say that, "Studies on the use of 19 talcum powder-dusted diaphragms cannot address 20 the question of whether perineal use is 21 associated with an increased risk of ovarian 22 cancer"; correct?</p> <p>23 A. Where is that?</p> <p>24 Q. It's what we just read.</p> <p>25 A. No. It doesn't mean that. It just</p>	<p style="text-align: center;">Page 213</p> <p>1 earlier -- that I am not aware of one study that 2 shows that. But, you know, several shows that 3 talc ends up in the ovaries.</p> <p>4 Q. Well, given how talc, talcum powder 5 must travel to reach the ovaries, how can you 6 exclude data about the relationship between 7 ovarian cancer and talcum powder that is applied 8 directly to the cervix?</p> <p>9 MS. PARFITT: Objection. Misstates his 10 testimony.</p> <p>11 A. Nobody is excluding data. So this is 12 not exclusion of this data.</p> <p>13 But I am saying that this particular 14 question of talc-dusted diaphragms, A, is an 15 exclusive focus on one route of exposure, so it 16 does not answer the causal question about 17 perineal exposure.</p> <p>18 And, two, it is not excluded. It's included 19 and discussed and several flaws are noted, 20 including, you know, data extraction errors for 21 the most part, inclusion of studies.</p> <p>22 And so -- and as can you see in my 23 methodological rating of meta-analyses, it is 24 weighted differently than others. So it is not excluded.</p>

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<p>1 Q. But you state, as the most important 2 limitation of the Huncharik 2007 study, is the 3 exclusive focus on talc powder-dusted diaphragms. 4 A. Yeah. 5 Q. And those diaphragms are applied 6 directly to the cervix; is that right? 7 A. Yeah. Because -- because of its 8 exclusive focus. If the study had, you know, 9 other routes of exposure, yeah. 10 What I'm trying to say is its exclusive 11 focus on one route of exposure cannot -- if 12 you're just asking the question about dust, 13 dusted diaphragm, then don't make inferences 14 about perineal routes of exposure. You have to 15 look at broader exposures. 16 Q. On what studies are you relying to say 17 that talcum powder affects the body differently 18 when it is applied to the perineal region and 19 travels to the cervix compared to when it is 20 applied directly to the cervix? 21 A. I have not made a distinction between 22 those studies. 23 Q. And, in fact, when applied to the 24 perineal region, the talcum powder would also be 25 in close contact with a woman's urethra; is that</p>	<p>1 don't know anything about. I don't -- you know, 2 I haven't reviewed it to answer that question. 3 Q. Do you have an opinion on whether 4 inhaled talc can migrate to the ovaries? 5 A. Yeah. I mean, I think the primary 6 route of exposure is, you know, reproductive, but 7 there are some potential, I would say, you know, 8 potential plausible mechanisms that, you know, 9 when perineal application is applied, it can get 10 inhaled through the lungs and potentially reach 11 the ovaries. But I think that that mechanism is 12 probably not as plausible as the reproductive 13 mechanism. 14 Q. Well, in fact, studies of talcum powder 15 use failed to show a statistically significant 16 association between nongenital use of talcum 17 powder and ovarian cancer; correct? 18 MS. PARFITT: Objection. Form. 19 A. Yeah. And I've cited those studies. 20 Q. If inhaled talc could migrate to the 21 ovaries, wouldn't you expect to see increased 22 ovarian cancer risk with nongenital use of talcum 23 powder? 24 MS. PARFITT: Objection. 25 A. Well, I mean, it also depends on, you</p>
<p>1 right? 2 MS. PARFITT: Objection. Form. 3 A. Yeah. I mean, anatomically. 4 Q. Substances are capable of traveling up 5 the urethra; correct? 6 A. I mean, yes. Just as we agree that, 7 you know, talc can migrate upwards, substances 8 can migrate through the urethra. If you agree 9 talc can migrate upwards, then, you know, 10 substances can migrate through the urethra. 11 Q. Women get urinary tract infections when 12 bacteria travels up the urethra; correct? 13 A. Yeah. 14 Q. But studies do not show an increase in 15 bladder cancer with talcum powder use, do they? 16 MS. PARFITT: Objection to form. 17 A. I did not ask the causal question about 18 that. And, you know, I have not evaluated. 19 Maybe there are studies that show decreased risk 20 for all that I know. I just can't answer that 21 question. 22 Q. And studies do not show an increase in 23 rectal cancer with talcum powder use; is that 24 right? 25 A. I don't answer the questions that I</p>	<p>1 know, the quantity of inhalation, the degree of 2 talc that's -- and I don't know enough about that 3 to say that, yes, there's a sufficient quantity, 4 you know, migration to cause that. I don't know 5 which studies have evaluated sort of inhaled talc 6 and ovarian cancer. 7 Q. Well, let's look back at Cramer 2016, 8 Page -- or Exhibit 24. Do you have that in front 9 of you? 10 A. Yeah. 11 Q. In that study, Cramer found no apparent 12 risk associated with nongenital talc use; isn't 13 that correct? 14 A. Yeah. And I think I cite that in my 15 report, too. 16 Q. You don't disagree that Cramer, in his 17 study, 2016, did find no apparent risk associated 18 with nongenital talc use; correct? 19 A. Yeah. 20 Q. The same result was found in the pooled 21 analysis that was done by OCAC, Ovarian Cancer 22 Association Consortium; is that right? 23 MS. PARFITT: Objection. Which study 24 are you referring to? What year? There have 25 been many studies by OCAC.</p>

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<p>1 MR. ZELLERS: I'm referring to Page 341 2 of the Cramer article. Page -- strike that. 3 The second and third paragraphs. 4 BY MR. ZELLERS: 5 Q. Tell me when you have that, Doctor. 6 A. 341. Discussion? 7 Q. Yes. So in the second and third 8 paragraph, I'm reading the second sentence. 9 "Talc use regularly" -- strike that. 10 {Talc used regularly in the genital area was 11 associated with a 33 percent increase in ovarian 12 cancer risk overall while no apparent risk was 13 associated with talc used only in nongenital 14 areas." 15 A. Yeah. And I agree with their opinion. 16 Q. All right. Do you also agree with the 17 next sentence? "Our results are consistent with 18 the recent pooled analysis from the OCAC which 19 reported that use of powder on genitals is 20 associated with a 24 percent increased risk and 21 no effect of nongenital use of talc." 22 A. Yeah. 23 Q. Have you ever performed any study 24 yourself pertaining to whether inhaled talc can 25 migrate to the ovaries?</p>	<p>1 mechanisms that have been shown in terms of 2 increase in, you know, inflammatory enzymes, and 3 increase in alterations of redox potential that 4 are some of the potential plausible biological 5 mechanisms. Again, other people who are 6 biological experts will opine on them and detract 7 from the strengths and weaknesses. 8 Q. You have not done an expert review of 9 inflammation evidence yourself; correct? 10 A. When you say -- I mean, expert review 11 of inflammation. 12 MS. PARFITT: Object. 13 Q. You're deferring to other experts on 14 the topic and subject of inflammation; is that 15 right? 16 MS. PARFITT: Objection. 17 A. Yeah. I mean, other experts, I mean, I 18 can look at the evidence and see, A, one, that 19 inflammation plays a role in cancer. Two, 20 inflammation plays a role in ovarian cancer. 21 At least my opinion is that, you know, talc 22 can, you know, induce inflammation; others will 23 provide more detailed opinion. 24 Q. In terms of the mechanism by which 25 ovarian cancer may or may not be related to</p>
<p>1 A. No. And I would have a different job. 2 That's not my area of expertise. 3 Q. And you can't, as we sit here, cite me 4 to such a study; correct? 5 A. Well, I don't know if it's -- I'll go 6 back to my report and just cite that -- that 7 Dr. Luongo, you know, has done analyses which say 8 that inhaled talc can migrate. 9 Q. You're not expressing that opinion here 10 today; correct? 11 A. No. I'm not. I'm not vouching for his 12 testimony. 13 Q. Assuming baby powder can reach the 14 ovaries, what is the method by which baby powder 15 causes ovarian cancer? 16 A. So, yeah. I mean, we talked about, you 17 know, potential biological mechanisms of 18 inflammation. 19 And, again, I don't -- in my inference on 20 biologic plausibility, I don't intend to offer 21 the opinion that, A, I know the precise 22 biological mechanisms which cause biological -- 23 ovarian cancer or the precise steps by which talc 24 causes it. 25 But, you know, there are several, you know,</p>	<p>1 inflammation, you are deferring to other experts; 2 correct? 3 MS. PARFITT: Objection. Misstates his 4 testimony. He just told you -- 5 MR. ZELLERS: I'm asking him the 6 question. Okay? 7 MS. PARFITT: Counsel, he did answer 8 it. And you just asked the question again and 9 you misstated what he said. 10 MR. ZELLERS: Ms. Parfitt, please. I 11 thought we had a discussion. 12 MS. PARFITT: We did. 13 MR. ZELLERS: We ought not to have 14 speaking objections. 15 MS. PARFITT: We don't. But I'll tell 16 you the discussion we did have. You can't 17 misstate -- 18 MR. ZELLERS: I'm allowed to ask the 19 witness what his opinions are and are not. 20 MS. PARFITT: Absolutely. But not to 21 misstate them. That's all. Let's ask it again. 22 THE WITNESS: I'm sorry. I forgot. 23 MR. ZELLERS: It was a question. 24 THE WITNESS: What was the question? 25 MR. ZELLERS: Can you read the</p>

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<p>1 question?</p> <p>2 MS. PARFITT: Listen carefully to the</p> <p>3 question.</p> <p>4 MR. ZELLERS: Okay. Again,</p> <p>5 Ms. Parfitt, let the witness handle himself.</p> <p>6 He's an experienced, capable person.</p> <p>7 MS. PARFITT: Yes. I would certainly</p> <p>8 both agree with that. He's quite good.</p> <p>9 (The question was read by the</p> <p>10 reporter, as requested.)</p> <p>11 MS. PARFITT: Objection. Misstates his</p> <p>12 testimony.</p> <p>13 A. No. To the extent that my causal</p> <p>14 question needs -- you know, evaluated the</p> <p>15 evidence on the link between, you know,</p> <p>16 inflammation, ovarian cancer and talc and</p> <p>17 inflammation, I can opine that, you know, this</p> <p>18 link supports my causal opinion. Whereas, to the</p> <p>19 precise details of such a link, I would obviously</p> <p>20 defer to other experts.</p> <p>21 BY MR. ZELLERS:</p> <p>22 Q. Not all inflammatory conditions lead to</p> <p>23 cancer; correct?</p> <p>24 A. Yes. And there are pro-oxidant</p> <p>25 conditions and there are antioxidants. And I</p>	<p>1 Q. Rheumatoid arthritis doesn't increase</p> <p>2 the risk of ovarian cancer, does it?</p> <p>3 A. I don't know that question. I have not</p> <p>4 evaluated it.</p> <p>5 Q. Psoriasis does not increase the risk of</p> <p>6 ovarian cancer, does it?</p> <p>7 A. For all, it could. We don't know that.</p> <p>8 We can spend time reviewing that. We can't</p> <p>9 answer questions.</p> <p>10 Q. We're here to talk about the science;</p> <p>11 correct?</p> <p>12 A. Yeah. So the science, you have to</p> <p>13 look -- I haven't looked at psoriasis and cancer.</p> <p>14 I haven't looked at, for example, rheumatoid</p> <p>15 arthritis increases cardiovascular disease,</p> <p>16 because I've looked at it. I can't answer</p> <p>17 questions that I haven't looked at.</p> <p>18 Q. Have you done an expert review of the</p> <p>19 role of inflammation in causing ovarian cancer?</p> <p>20 Have you personally done that review?</p> <p>21 A. No. I have just looked at, you know,</p> <p>22 what is the role of inflammation in ovarian</p> <p>23 cancer, and are there plausible biological</p> <p>24 mechanisms that either support or refute whether</p> <p>25 talc can induce inflammation.</p>
<p>1 examined the evidence which relates to if there</p> <p>2 were -- you know, if talcum powder products, for</p> <p>3 example, had antioxidants or, in the Saed study,</p> <p>4 they increased the level of antioxidant enzymes,</p> <p>5 then that would be evidence against the link</p> <p>6 between redox potential and talc and ovarian</p> <p>7 cancer. So there are various pieces of the</p> <p>8 evidence.</p> <p>9 Q. All of us experience inflammatory</p> <p>10 reactions of one sort or another, including</p> <p>11 chronic conditions, and they do not all lead to</p> <p>12 cancer; correct?</p> <p>13 MS. PARFITT: Objection. Form.</p> <p>14 A. Yeah. But it's the balance of -- you</p> <p>15 know, that is altered between pro-inflammatory</p> <p>16 and anti-inflammatory conditions and the</p> <p>17 pro-oxidant state and the antioxidant state in my</p> <p>18 understanding that, you know, is a plausible</p> <p>19 mechanism for talc in ovarian cancer. Again,</p> <p>20 based on my understanding. Others will provide</p> <p>21 details.</p> <p>22 Q. Rheumatoid arthritis is an inflammatory</p> <p>23 condition; right?</p> <p>24 A. Heart disease is -- everything is</p> <p>25 inflammation.</p>	<p>1 Q. How does an acute inflammatory response</p> <p>2 lead to cancer?</p> <p>3 A. Yeah. I mean, and I'm not making a</p> <p>4 case for an acute inflammatory. I'm not sure.</p> <p>5 Did I state that? You know, this is a chronic</p> <p>6 inflammatory process.</p> <p>7 Q. What evidence is there that externally</p> <p>8 applied talcum powder causes chronic</p> <p>9 inflammation?</p> <p>10 A. Yeah. I mean, you know -- can you give</p> <p>11 me a second?</p> <p>12 Q. Sure.</p> <p>13 A. Yeah. I'm not aware of a study that</p> <p>14 talc specifically itself causes chronic</p> <p>15 inflammation.</p> <p>16 Q. There are no reports in the literature</p> <p>17 of externally applied talc leading to</p> <p>18 inflammation, granulomas, fibrosis or adhesions</p> <p>19 anywhere along a woman's reproductive tract;</p> <p>20 correct?</p> <p>21 MS. PARFITT: Objection.</p> <p>22 A. Yeah. There are other studies that,</p> <p>23 you know, not externally applied.</p> <p>24 Q. If up to 50 percent of U.S. women have</p> <p>25 used genital talc, shouldn't this be a common</p>

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<p>1 finding?</p> <p>2 MS. PARFITT: Objection. Form.</p> <p>3 A. So I'll step back and share with you</p> <p>4 what epidemiology.</p> <p>5 Yeah. I mean, ovarian cancer, the incidence</p> <p>6 of ovarian cancer is, what, 11 by 100,000. It's</p> <p>7 a very rare cancer. Even if 50 percent use it,</p> <p>8 you know, it increases, you know, it affects it.</p> <p>9 So we are not -- nobody is saying that,</p> <p>10 yeah, every woman who gets talc will get it. So</p> <p>11 just because there's an increased risk with talc,</p> <p>12 how much of the U.S. population should get</p> <p>13 ovarian cancer is a different question. That's</p> <p>14 not what I estimated.</p> <p>15 That's -- you're asking a question about</p> <p>16 attributable risk and population attributable</p> <p>17 risk. Some have attributed it to 10 percent,</p> <p>18 40 percent. I haven't done that estimation.</p> <p>19 MR. KLATT: Move to strike.</p> <p>20 Nonresponsive.</p> <p>21 MR. ZELLERS: Join.</p> <p>22 Q. Granulomas, fibrosis or adhesions don't</p> <p>23 cause ovarian cancer; correct?</p> <p>24 MS. PARFITT: Objection.</p> <p>25 A. I'm not aware of precise biological</p>	<p>1 A. Yeah. And I think it's the studies on</p> <p>2 NSAIDs. I don't remember the precise -- I don't</p> <p>3 know if -- yeah. It's Ness or --</p> <p>4 Q. I will and do intend to ask you a few</p> <p>5 questions about NSAIDs and about some of those</p> <p>6 studies.</p> <p>7 A. I think that's where --</p> <p>8 Q. Well, let me talk about or ask you a</p> <p>9 question about a study that you do cite in</p> <p>10 support of your inflammation opinion. You rely</p> <p>11 on -- is it Saed 2018 article?</p> <p>12 A. Yes.</p> <p>13 MR. ZELLERS: I'll hand you the Saed</p> <p>14 2018 paper.</p> <p>15 (Article entitled "New Insights</p> <p>16 into the Pathogenesis of Ovarian Cancer:</p> <p>17 Oxidative Stress" marked Exhibit 26.)</p> <p>18 MS. PARFITT: Thank you.</p> <p>19 MR. ZELLERS: We'll mark that as</p> <p>20 Deposition Exhibit 26.</p> <p>21 BY MR. ZELLERS:</p> <p>22 Q. This is a study that you cite in</p> <p>23 support of your position; is that right?</p> <p>24 A. I don't know if I cite it as a support</p> <p>25 of my position. I cite it as an article that</p>
<p style="text-align: center;">Page 227</p> <p>1 mechanisms of, you know, ovarian cancer.</p> <p>2 Q. Isn't the theory of inflammation as a</p> <p>3 cause of ovarian cancer an unproven hypothesis?</p> <p>4 MS. PARFITT: Objection.</p> <p>5 A. Well, it's a plausible hypothesis that,</p> <p>6 you know -- and it's well accepted that, you</p> <p>7 know, one of the mechanisms is inflammation.</p> <p>8 Q. It's still unproven; correct?</p> <p>9 MS. PARFITT: Objection. Misstates</p> <p>10 testimony.</p> <p>11 A. Well, I'm not -- my standard wasn't</p> <p>12 looking at absolute certainty that, A, talc</p> <p>13 induces inflammation, and inflammation causes</p> <p>14 ovarian cancer. I'm looking for evidence for or</p> <p>15 against whether inflammation, you know, induces</p> <p>16 or reduces ovarian cancer.</p> <p>17 Q. What studies or evidence do you cite in</p> <p>18 your report against the proposition or theory</p> <p>19 that inflammation is a cause of ovarian cancer?</p> <p>20 A. Yeah. I think -- I'm sorry. The</p> <p>21 question was what studies --</p> <p>22 Q. You told me it was important to cite</p> <p>23 both the studies that support your position and</p> <p>24 also the studies that refute your position; is</p> <p>25 that right?</p>	<p style="text-align: center;">Page 229</p> <p>1 shares insight into the parthenogenesis of</p> <p>2 ovarian cancer. I mean, you know, he's the</p> <p>3 expert and he'll form his opinion.</p> <p>4 So it's a study cited in my report. In</p> <p>5 fact, I won't even be able to discuss the details</p> <p>6 of that study with you.</p> <p>7 Q. You're not comfortable discussing the</p> <p>8 details?</p> <p>9 A. Yeah. I mean --</p> <p>10 MS. PARFITT: Objection.</p> <p>11 A. -- you can ask a question and I'll try</p> <p>12 to answer to the best of my ability. And if I</p> <p>13 won't, I'll be able --</p> <p>14 Q. The point is, this is really an area</p> <p>15 for other experts; agreed?</p> <p>16 A. Yes. This is an area for other</p> <p>17 expertise.</p> <p>18 Q. Saed, that paper just looked at</p> <p>19 immortalized cell lines; is that right?</p> <p>20 MS. PARFITT: Objection. Form.</p> <p>21 A. Yes.</p> <p>22 Q. The authors do not identify what either</p> <p>23 the positive or the negative controls were; is</p> <p>24 that right?</p> <p>25 MS. PARFITT: Objection.</p>

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<p>1 A. So is this the study or is this just 2 their review article? 3 Q. This is the paper that you cite to in 4 your report. 5 A. Can you point out in my report which 6 reference number is that? I know I've cited 7 them, but I'm just trying to orient myself. 8 Q. Are you familiar with this paper? Have 9 you looked at it before? 10 A. Yes. I have looked at this paper, but 11 they also have other abstracts and other papers. 12 I think that's what I was relying on. 13 Yeah. So I'm relying on this and 125, Saed. 14 Q. The authors in this paper that you 15 support -- strike that -- that you cite and are 16 relying on do not identify what either the 17 positive or the negative controls were; correct? 18 MS. PARFITT: Objection. Misstates the 19 evidence. 20 A. Let me just look at 125, and then I'll 21 answer the question. 22 No. That's not 125. 23 Q. I'll move on and ask another question. 24 A. Sorry about that. 25 Q. That's all right.</p>	<p>1 users? 2 A. Yeah. So I don't know if that's 3 consistently. But as I mentioned earlier, and I 4 may have cited it in this study, that when I 5 talked about Ness, and I'm trying to find it, 6 but, yes, there is, you know, NSAIDs have not 7 been -- they don't consistently reduce the risk 8 of ovarian cancer, but in some studies, they have 9 shown to reduce the risk of ovarian cancer. 10 Q. If, in fact, inflammation was a 11 causative factor in ovarian cancer, and if NSAIDs 12 and aspirin use reduce inflammation, wouldn't you 13 expect some consistency in the studies that would 14 show NSAIDs and aspirin use reduced the incidence 15 of ovarian cancer? 16 A. So, first of all, you're asking a broad 17 question. Inflammation. What do you mean by 18 that? 19 And I don't know -- yeah. Exactly. So I 20 don't know the precise biological mechanisms of 21 ovarian cancer. And just because the ovarian 22 cancer-mediated inflammation is different from, 23 you know, anti-inflammatory, so both may be 24 entirely consistent, I'm not saying they are, but 25 both mechanisms, you could have NSAID-induced</p>
<p>1 Saed references unpublished data; correct? 2 MS. PARFITT: Objection. 3 A. Yeah. And I've just been informed by 4 counsel that it has been accepted for 5 publication, but the data that I -- that I 6 referenced were, you know, at the time, available 7 as abstracts. 8 Q. Saed referenced -- references 9 unpublished data that you rely on in coming up 10 with at least some of the opinions in your 11 report; is that right? 12 A. Yeah. I mean, it's one of the, you 13 know, number of studies that I reviewed. It's 14 not the only study on, you know, on biological 15 mechanisms. 16 Q. Why doesn't inflammation generally, for 17 example, in pelvic inflammatory disease, cause 18 ovarian cancer? 19 A. Again, that's not -- you know, that is 20 not -- I'm not going to be opining on the precise 21 mechanisms of ovarian cancer in my testimony or 22 my report. That's not my area of expertise. 23 Q. Why don't NSAIDs and aspirin use, which 24 supposedly reduce inflammation, consistently 25 reduce the incidence of ovarian cancer in chronic</p>	<p>1 reduce inflammation and NSAID-induced increase 2 inflammation. That's just not what -- that area 3 where other people will provide, you know, more 4 testimony. 5 Q. If inflammation is the issue, why would 6 cornstarch be a superior alternative to talc? 7 MS. PARFITT: Objection. Form. 8 Q. And to give you context, the FDA banned 9 the use of cornstarch on surgical gloves because 10 of the risk of inflammation, granulomas, 11 fibrosis, adhesions and irritation; is that 12 right? 13 A. I'm not aware of all the particular, 14 you know, regulatory actions on cornstarch. 15 Q. Take a look at the FDA 21 C.F.R. parts 16 878, 880, and 895. 17 MR. ZELLERS: We'll mark that as 18 Deposition Exhibit 27. 19 (Federal Register, Vol. 81, No. 20 243 marked Exhibit 27.) 21 BY MR. ZELLERS: 22 Q. If you look at the second page, first 23 paragraph, last sentence, so I'm under executive 24 summary. The last sentence in the last full 25 paragraph.</p>

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<p>1 "However, the use of powder on medical 2 gloves presents numerous risks to patients and 3 healthcare workers, including inflammation, 4 granulomas, and respiratory allergic reactions." 5 Did I read that right? 6 A. Yeah. 7 MS. PARFITT: Do you know where it is? 8 Mm-hmm. 9 A. Okay. 10 Q. Why, then, given that, would cornstarch 11 be considered a superior alternative to talc? 12 MS. PARFITT: Objection. Form. 13 A. Am I -- did I state in my -- I mean, 14 you know, I'm not evaluating the causal role of 15 cornstarch and, you know, its role in ovarian 16 cancer. I'm not even aware of the existence of 17 this document and what it pertains to. 18 I don't see any reference to cornstarch 19 here. I don't evaluate how they regulate various 20 products, whether it's food or cornstarch. 21 Q. Are you familiar with the term 22 "confounding"?</p> <p>23 A. Yes. 24 Q. That's where the presence of another 25 association confuses the relationship between the</p>	<p>1 is that right? 2 A. I don't disagree -- what I am trying to 3 define precisely confounding is that, you know, 4 it creates a different relationship, had the 5 confounder not been present, and I'm just trying 6 to say how it does that. 7 It's associated with the outcome. It's 8 associated with the exposure and not, you know, 9 and not on the -- 10 Q. Let's use an example, so we're sure 11 we're talking about the same thing. 12 If you are studying the association between 13 coffee and pancreatic cancer, you need to be 14 mindful of whether cigarette smoking is more 15 common in coffee drinkers than in the rest of the 16 population; correct? 17 A. Yes. 18 Q. Cigarette smoking could be a confounder 19 in that situation; is that true? 20 A. Well, so there are several parts to 21 that. Just because it's more common in coffee 22 drinkers does not make it a confounder. To make 23 a confounder, you have to have three specific. 24 What you're talking is, yeah, it's associated 25 with coffee. But is it associated with</p>
<p style="text-align: center;">Page 235</p> <p>1 exposure and disease being studied; correct? 2 A. I don't -- I don't think that's the 3 definition of confounding. 4 Q. What is wrong with that definition? 5 A. Confusion is not an epidemiologic term. 6 There's no such thing as confusion in 7 epidemiology. You have bias. You have 8 misclassification. You have measurement error. 9 Confounding is a case where you have a 10 variable that's related to the outcome and 11 that's, you know, maybe associated with the 12 exposure and is not on the causal pathway between 13 exposure and outcome. 14 And, you know, it creates an artifactual 15 relationship between exposure and outcome. 16 Q. Confounding and confusion are similar 17 terms; correct? 18 A. No. They're not. Confounding is a 19 scientific term. Confusion is layman from that. 20 I don't think it has -- at least in my term, I 21 don't -- 22 Q. So you disagree that confounding 23 relates to the presence of another association 24 which potentially confuses the relationship 25 between the exposure and disease being studied;</p>	<p style="text-align: center;">Page 237</p> <p>1 pancreatic cancer? Is it on the causal pathway? 2 So a confounder is a very precise 3 epidemiologic term. It's not just everything we 4 pull off the air and say because it's associated 5 with the coffee, it becomes a confounder. 6 Q. Listen to my question. 7 A. Sure. 8 Q. Cigarette smoking could be a confounder 9 in my hypothetical; right? 10 A. If it was associated with pancreatic 11 cancer and not present in the causal pathway and, 12 obviously, associated with coffee. 13 Q. Because if more coffee drinkers are 14 smokers than non-coffee drinkers -- 15 A. It could be the other way around. 16 Q. Exactly. An association between coffee 17 drinking and pancreatic cancer might be due to 18 smoking and not the coffee drinking; correct? 19 A. Yes. 20 Q. Confounding can distort results in 21 epidemiological studies; is that right? 22 A. Yes. And you have to adjust for 23 confounding. 24 Q. Residual confounding is possible in 25 every occupational study; is that right?</p>

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<p>1 MS. PARFITT: Objection. 2 A. Sorry. Can you repeat the question? 3 MS. PARFITT: Here it is. 4 Q. Sure. Residual confounding is possible 5 in every observational study; correct? 6 A. Observational. Yeah. 7 It is possible; right? Is that what you 8 said? 9 Q. Yes. 10 A. Yeah. Residual confounding is possible 11 because you can't measure, you know, every 12 variable that you can think of. 13 Q. And unmeasured confounders may be 14 present in every observational study; correct? 15 A. Yeah. There's always the potential for 16 unmeasured confounding. It doesn't mean that it 17 exists. 18 Q. It's impossible to say that all known 19 and unknown confounding factors have been 20 controlled for in any given study; correct? 21 A. You don't -- you know, what you don't 22 know, you can't control for. 23 Q. In this case, new factors possibly 24 involved in ovarian cancer are just being 25 published in the literature; is that right?</p>	<p>1 But most importantly, just because, A, first 2 of all, are they associated with the outcome? 3 Then you have to ask, are they causally 4 associated, and they would have to be associated 5 with the exposure talc to be considered a 6 confounder, just because they're a risk factor. 7 Every risk factor need not be controlled in a 8 study. You have to be associated with the 9 exposure to, you know, consider the confounder. 10 That is the precise definition of 11 confounding, is you have to be associated with 12 the exposure. You have to be associated with the 13 outcome. And you can't be on the path. 14 So just because chlamydia -- let me finish. 15 Chlamydia, A, has a risk factor of ovarian 16 cancer. If I design a study tomorrow for X and 17 ovarian cancer, you know, I'm not going to 18 consider it a confounder for my analysis. 19 Q. Confounders can distort the results in 20 epidemiological studies; correct? 21 MS. PARFITT: Objection. Form. 22 A. Yeah. We've discussed that, I think. 23 THE WITNESS: We'll take a break. If 24 you want to finish this confounding thing. 25 MR. ZELLERS: No. We can take a break</p>
<p>1 MS. PARFITT: Objection. Vague. 2 A. Yeah. I don't -- I don't know what 3 you're like -- just give me an example so I 4 can -- 5 Q. Okay. History of chlamydia infection 6 and history of weight gain during adolescence are 7 two recent examples that are being published in 8 the literature as factors possibly involved with 9 ovarian cancer; correct? 10 MS. PARFITT: Objection. Form. 11 A. I haven't seen them. But I mean, 12 weight gain has been adjusted for in several of 13 the analyses. So I don't know about that. Yeah. 14 Q. Well, let's assume -- 15 A. We're talking about chlamydia. 16 Q. Let's assume that that's correct. 17 Those factors, history of chlamydia 18 infection and history of weight gain during 19 adolescence, those factors were not controlled 20 for in any of the published talc-ovarian cancer 21 studies, were they? 22 MS. PARFITT: Objection. Form. 23 A. Yeah. So if they're not known, first 24 of all, you have to evaluate and, you know, is 25 that a true -- true association?</p>	<p>1 now. 2 MS. PARFITT: Good. Thank you. 3 THE VIDEOGRAPHER: This ends Media 3. 4 Off the record, 2:17 p.m. 5 (A recess was taken.) 6 THE VIDEOGRAPHER: Here begins Media 7 No. 4 in today's deposition of Sonal Singh, MD, 8 M.P.H. Back on the record, 2:29 p.m. 9 BY MR. ZELLERS: 10 Q. Dr. Singh, in your report, at Page 54, 11 Paragraph 7, you address the subject of 12 confounding in studies of talcum powder use and 13 ovarian cancer; is that right? 14 A. Yes. 15 Q. On Page 54 of your report, you state, 16 "Although there are some risk factors for ovarian 17 cancer," and then it continues, "for any of them 18 to be confounding to an extent that could account 19 for the positive relations that have been 20 reported, they would have to be strongly 21 correlated with talc use. Family history, 22 ethnicity, obesity and some reproductive risk 23 factors are positively associated with the risk 24 of ovarian cancer, but the magnitude of these 25 associations does not appear high enough to</p>

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<p>1 introduce enough confounding either jointly to 2 explain completely the positive associations." 3 And it should be the positive association. 4 A. Yes. 5 Q. Is that the statement that you make? 6 A. Yes. 7 Q. There's no citation for that statement; 8 is that right? 9 A. Yes. But partly because I couldn't 10 find evidence -- and, you know, about the risk of 11 talcum powder use and these risk factors. And so 12 that -- so the issue that I -- prior to the 13 statement, states that -- these other risk 14 factors, which we know are risk factors for 15 ovarian cancer. 16 Q. Is this your statement that you made 17 here? 18 A. Yeah. Let me just explain what I did 19 here. 20 Q. That was a simple question. 21 A. Yeah. It is my statement. 22 Q. Have I read your statement? 23 A. Yes. But it is about the fact that we 24 don't have, you know, family history, ethnicity, 25 obesity and reproductive factors associated, but</p>	<p>1 Cancer"; is that right? 2 A. If I haven't, then I haven't. Yeah. 3 Q. You did put it on your additional 4 materials and data considered. 5 Do you see that? 6 A. Yes. 7 Q. It's on the last page. 8 MR. ZELLERS: I'm going to mark that 9 paper as Exhibit 28. 10 (Document entitled 11 "Interpretation of Epidemiologic Studies on 12 Talc and Ovarian Cancer" marked 13 Exhibit 28.) 14 MS. PARFITT: Thank you. 15 MR. ZELLERS: You're welcome. 16 BY MR. ZELLERS: 17 Q. Do you see Exhibit 28 in front of you? 18 A. Yes. 19 Q. Exhibit 28 is an article prepared by 20 Kenneth Rothman entitled "Interpretation of 21 Epidemiologic Studies of Talc and Ovarian 22 Cancer." 23 Is that right? 24 A. Yes. 25 Q. Take a look at Page 5 of that paper,</p>
<p style="text-align: center;">Page 243</p> <p>1 these associations, as it relates to talc use, we 2 don't have data on how these -- to be considered 3 a confounder, they have to be associated with 4 talc use. We don't have data on that. 5 Q. My question just is: Did you write 6 that? 7 A. I did. Yeah. 8 Q. All right. Now, do you know who Ken 9 Rothman is? 10 A. Yeah. He has written a textbook on 11 epidemiology. 12 Q. He is a well-respected epidemiologist; 13 is that right? 14 A. Yeah. He's well respected. 15 Q. He has written a textbook on 16 epidemiology that's widely recognized as one of 17 the best; is that right? 18 MS. PARFITT: Objection. 19 A. It is nice. I mean, I have a copy of 20 it. 21 Q. I've looked at your report and your 22 reliance list. In terms of your reliance list, 23 you do not cite to a paper by Ken Rothman and 24 others published in 2000 entitled "Interpretation 25 of Epidemiologic Studies in Talc and Ovarian</p>	<p style="text-align: center;">Page 245</p> <p>1 the second paragraph. 2 Do you see where -- 3 A. Confounding, you're talking about? 4 Q. Yes. Where Rothman discusses 5 confounding? 6 A. Yeah. 7 Q. Other than the list of four risk 8 factors in parentheses, you just copied the 9 language from Dr. Rothman's article and pasted it 10 into Page 54 of your report; correct? 11 MS. PARFITT: Objection. 12 A. No. 13 Q. All right. Do you have your report in 14 front of you, Page 54? 15 A. And you say that I don't cite this 16 article or -- 17 Q. If you don't cite that article, you 18 have just testified under oath that these are 19 your words in your report. 20 So take a look at Page 54 of your report. 21 Take a look at Page 5 of the Rothman paper. 22 A. Yeah. I mean, you know, I may have -- 23 I think I'm talking of different risk factors. 24 Q. Doctor -- 25 MS. PARFITT: Let him finish, please.</p>

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<p>1 MR. ZELLERS: Okay.</p> <p>2 A. I may have failed to cite that article.</p> <p>3 You know, it's okay. I mean, it's not okay, but</p> <p>4 I'm just saying I may have failed to cite that</p> <p>5 article.</p> <p>6 Q. Do you agree that the entire first part</p> <p>7 of Rothman on confounding that you have cited</p> <p>8 word for word in your report, and you can start</p> <p>9 with "although there have been some strong risk</p> <p>10 factors for ovarian cancer, for any of them to be</p> <p>11 confounding."</p> <p>12 A. Yeah.</p> <p>13 Q. If you read the rest, all the way</p> <p>14 through the next couple of sentences, down to</p> <p>15 "positive association," it's --</p> <p>16 A. Yeah.</p> <p>17 Q. -- word for word; right?</p> <p>18 A. Yeah. I wouldn't say I copy and</p> <p>19 pasted. I would say that I have not referenced</p> <p>20 it.</p> <p>21 Q. You copied and pasted it.</p> <p>22 A. No. I did not. I read it, and I wrote</p> <p>23 it. And I did not reference it.</p> <p>24 Q. You didn't write it. It's exactly word</p> <p>25 for word from the Rothman paper --</p>	<p>1 factors, family history, obesity and reproductive</p> <p>2 history," what else is different? Show me one</p> <p>3 word that is different --</p> <p>4 A. Yeah.</p> <p>5 Q. -- between what you've written here and</p> <p>6 what is written by Rothman in his paper.</p> <p>7 A. Yeah. It isn't, and I should have</p> <p>8 cited it.</p> <p>9 Q. All right. The paper by Rothman and</p> <p>10 others -- well, strike that.</p> <p>11 A. And where was this published, just -- I</p> <p>12 mean, it doesn't have a citation in it.</p> <p>13 Q. If you're going to copy it word for</p> <p>14 word --</p> <p>15 A. I did not.</p> <p>16 MS. PARFITT: Excuse me. Object to the</p> <p>17 question. Don't be argumentative, Counsel. He</p> <p>18 said he didn't cut and paste it. He said he</p> <p>19 failed to cite it. That's his testimony.</p> <p>20 A. You can, you know, go forward and say</p> <p>21 that.</p> <p>22 Q. The question is: You don't know -- let</p> <p>23 me withdraw that. You're looking at something.</p> <p>24 A. Yeah. Go ahead and ask the question.</p> <p>25 Q. You thought that this was a reliable</p>
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<p>1 A. No. It isn't.</p> <p>2 Q. -- with the exception of you added, in</p> <p>3 parentheses --</p> <p>4 A. Yeah.</p> <p>5 Q. -- "genetic risk factors, family</p> <p>6 history, obesity and reproductive history"; is</p> <p>7 that right?</p> <p>8 A. Yeah. And I didn't cite it, but -- so</p> <p>9 you look at a study and a paper, and, you know, I</p> <p>10 wrote it. And I was remiss in not citing it. I</p> <p>11 didn't copy and paste it.</p> <p>12 Q. Well, you copied it word for word;</p> <p>13 correct?</p> <p>14 A. I did not.</p> <p>15 MS. PARFITT: Objection. Misstates his</p> <p>16 testimony.</p> <p>17 A. I'm saying what I did. But I did not</p> <p>18 cite it.</p> <p>19 Q. The fact are the facts.</p> <p>20 A. Well, the facts are that the content is</p> <p>21 different and I did not cite it.</p> <p>22 Q. What content is different other than</p> <p>23 you adding in --</p> <p>24 A. The risk factors.</p> <p>25 Q. -- parens, "Example, genetic risk</p>	<p>1 source; correct?</p> <p>2 A. Yes. And I did not cite it.</p> <p>3 Q. The Rothman paper, Exhibit 28?</p> <p>4 A. Yes.</p> <p>5 Q. All right. Now --</p> <p>6 A. Well, it's a source. I mean, it's in</p> <p>7 with other source that I rely on.</p> <p>8 Q. At least in these couple of</p> <p>9 sentences --</p> <p>10 A. In the paragraph.</p> <p>11 Q. -- you agree; correct?</p> <p>12 A. Yeah.</p> <p>13 MS. PARFITT: Agree what? Agree what?</p> <p>14 Q. Agree that the -- the two sentences</p> <p>15 from Rothman are the same two sentences as in his</p> <p>16 report and does he agree with those two</p> <p>17 sentences?</p> <p>18 A. Well, obviously, the risk factors are</p> <p>19 different, because I know more about the risk</p> <p>20 factors since 2000. And -- but the point that</p> <p>21 I'm trying to make, and as you can see the</p> <p>22 language is the same, and it should have been</p> <p>23 cited.</p> <p>24 Q. You told us throughout this deposition</p> <p>25 that it's important for you to be -- as an</p>

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<p>1 expert, to be fair and to cite information, 2 positions on -- that both support and refute your 3 position and plaintiffs' position; correct? 4 A. Well, it's not about their position, 5 support or refute the causal hypothesis. 6 And I'm agreeing that I was remiss in not 7 citing this. 8 Q. You also did not cite the next sentence 9 of Rothman -- 10 A. Yes. 11 Q. -- which states, "Of course, it remains 12 possible that yet unidentified risk factors for 13 ovarian cancer could be important confounders, 14 and several such factors in the aggregate could 15 give risk to an overall association as weak as 16 the one between talc and ovarian cancer." 17 You did not cite that; correct? 18 A. Yeah. And -- but that is already 19 expressed. The same factor is also expressed in 20 the first sentence. Confounding is one potential 21 explanation for -- so, you know, again, if I had 22 placed that sentence, you would say that, well, 23 you're taking three lines, four. 24 So I cite that confounding is one potential 25 explanation.</p>	<p>1 MS. PARFITT: No worries. No worries. 2 A. Which line are you in there? 3 Q. Sure. Look at "recall bias." Does the 4 third sentence state, "Recall bias can readily 5 introduce enough bias to produce the modestly 6 sized overall effect, relative risk equal 1.3, 7 that emerges from these studies"? 8 A. That's -- yeah, that's his 9 interpretation. 10 Q. You don't disagree with that, do you? 11 A. Well, I do disagree in the sense that, 12 you know, he's making inference on the magnitude. 13 I'm not disagreeing that there's a potential for 14 recall bias. But, you know, as I've discussed in 15 my report and -- and, again, if you say that, 16 then I should be writing the Rothman paper 17 instead of my report. Right? You would want Ken 18 Rothman to testify. 19 You have to, you know, take -- you know, I 20 understand what he's trying to say. He's saying 21 that recall bias can introduce an element that 22 would produce 1.3. 23 Q. In fact, Rothman and the other authors 24 of this paper conclude that the modest positive 25 association --</p>
<p>1 Q. You don't disagree with that statement. 2 A. Yeah. Yeah. Because that's one, you 3 know, it's stated that, you know, one potential 4 explanation. 5 Q. All right. Look at, if you will, on 6 Page 1 of the Rothman paper, the middle 7 paragraph. Rothman states, "Most of the 8 published studies are interview-based, 9 case-control studies subject to recall bias which 10 can readily give rise to associations of this 11 magnitude." 12 Did I read that correctly? 13 A. Yes. 14 Q. Go to Page 4, third paragraph of the 15 Rothman paper, Exhibit 28. I'm looking at the 16 section under "recall bias," and the third 17 sentence, "Recall bias can easily introduce 18 enough bias to produce the modestly sized overall 19 effect, relative risk equals 1.3, that emerges 20 from these studies." 21 MS. PARFITT: The only correction -- 22 Q. Is that what Rothman wrote? 23 MS. PARFITT: I'm sorry. It does say 24 "can readily." 25 MR. ZELLERS: I'm sorry.</p>	<p>1 A. Yeah. 2 Q. -- seen in epidemiological studies 3 could be explained by recall bias or an 4 unidentified confounding bias; correct? 5 A. Yes. 6 Q. You did not note in your report 7 Rothman's conclusion -- and if you turn to 8 Page 8, his conclusion -- "More important, there 9 is also positive evidence against a causal 10 association. The inverse dose-response trend for 11 both duration of use and frequency of use, a 12 pattern that could not be explained by a causal 13 relation. Based on these considerations, we 14 suggest that the evidence to date does not 15 indicate that talc can be 'reasonably anticipated 16 to be a human carcinogen.'" 17 A. Yes. And this report was prepared on 18 November 8, 2000. That's 20 years ago. And we 19 have many other studies subsequent to that 20 talking about dose-response, several other 21 understandings about biological mechanisms. 22 So if I wanted -- if you want me to just 23 cite to the Rothman paper or -- there are 115, 24 you know, papers. I mean, there are other -- 25 others will have opined that talc doesn't cause</p>

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<p>1 ovarian cancer.</p> <p>2 Q. What methodology did you use to rule 3 out the effect of an unidentified confounding 4 bias or multiple unidentified confounding biases?</p> <p>5 A. Yeah. So I mean, as the meta-analyses 6 have shown, there are no differences between -- 7 most of the studies show no differences between 8 adjusted and unadjusted estimates, suggesting 9 that the potential for confounding is minimal.</p> <p>10 There is no way to rule out unmeasured 11 confounding. And that's always a possibility. 12 It doesn't mean that it exists.</p> <p>13 Q. As we discussed earlier, you did review 14 the Gertig 2000 paper and cite it in your report; 15 is that right?</p> <p>16 A. Yes.</p> <p>17 Q. On Page 48 of your report, you note 18 that Gertig 2000 found a statistically 19 significant increased risk for ever talc use for 20 serous invasive cancers; correct?</p> <p>21 A. Let me just come to that section.</p> <p>22 Yes.</p> <p>23 Q. Gertig did not control for BMI or for 24 cigarette smoking, did it?</p> <p>25 A. And I'm writing age, duration of</p>	<p>1 cigarette smoking and BMI.</p> <p>2 Q. That it did control for that?</p> <p>3 A. Yeah.</p> <p>4 Q. All right. Show me where, in Gertig 5 2000, that they state that they did control for 6 BMI and for cigarette smoking.</p> <p>7 A. "For age-adjusted analysis, we 8 categorized values as oral contraceptive use, 9 tubal ligation, post-menopausal, cigarette 10 smoking and BMI."</p> <p>11 Q. What page?</p> <p>12 A. That's two -- whatever that page is, 13 250. Yeah. That's my understanding.</p> <p>14 If you look at Table 1, they do have, you 15 know, cigarette smoking and whatnot. That's my 16 understanding.</p> <p>17 Q. Ter Riet 2013, you cite that in your 18 report; is that right?</p> <p>19 A. It is.</p> <p>20 Q. Terry 2013 did not adjust for a hormone 21 replacement therapy usage; correct?</p> <p>22 MS. PARFITT: Here is Ter Riet.</p> <p>23 A. Just let me go back to my report. This 24 is the Ter Riet meta-analysis?</p> <p>25 Q. Yes. Ter Riet 2013, meta-analysis.</p>
<p>1 contraceptive use, BMI, smoking status.</p> <p>2 Can I look at the study? Sorry.</p> <p>3 Q. You're not wasting my time, are you?</p> <p>4 A. No. No. Because my writeup says that.</p> <p>5 I may be incorrect. And I just want to make sure 6 that my writeup is -- you know, if we need to 7 correct it, I need to correct it. I'm sorry.</p> <p>8 MR. TISI: Did you mark it?</p> <p>9 MR. ZELLERS: No.</p> <p>10 THE WITNESS: I'm not wasting it, I'm 11 saying that because writeup -- I say that it 12 does.</p> <p>13 MS. PARFITT: Just so you know, mine is 14 a marked-up copy of it.</p> <p>15 MR. ZELLERS: I'm not going to mark it. 16 I'm not going to look at it. I just want the 17 doctor to answer the question.</p> <p>18 MS. PARFITT: Sure. Here's a copy of 19 Gertig.</p> <p>20 BY MR. ZELLERS:</p> <p>21 Q. And my question is very simply --</p> <p>22 A. Age and smoking.</p> <p>23 Q. -- Gertig -- yes -- did not -- well,</p> <p>24 BMI --</p> <p>25 A. Yeah. It says it conducted for</p>	<p>1 Okay.</p> <p>2 Q. The question is: Did Ter Riet 2013 3 adjust for hormone replacement therapy usage?</p> <p>4 A. Ter Riet.</p> <p>5 MS. PARFITT: Here is a copy.</p> <p>6 A. Mine doesn't say that. Usually, 7 Table 1 should answer that question.</p> <p>8 HRT, right? I don't have that data, and I 9 haven't included it in my report.</p> <p>10 Q. If hormone replacement therapy is a 11 risk factor for ovarian cancer, and assuming that 12 Ter Riet did not account for that, that is a 13 potential confounding factor; correct?</p> <p>14 A. Again, I have a slight difference in 15 your and my definition of confounding, that you 16 would have to obviously know if there is an 17 association with talc exposure for it to be 18 considered a confounder in that specific study.</p> <p>19 Q. All right. You cannot say whether the 20 odds ratio of Ter Riet 2013 in that study would 21 have been lower if the authors had adjusted for 22 hormone replacement therapy usage; correct?</p> <p>23 MS. PARFITT: Objection.</p> <p>24 A. Or higher. I mean, we cannot say one 25 way or the other.</p>

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<p>1 Q. Recall bias, it's a concern in every 2 retrospective study; is that right? 3 A. Yeah, it is a potential concern in 4 design of studies where, you know, you're asking 5 about past exposure.</p>	<p>1 talc exposure as part of larger questionnaires on 2 other risk factors, minimizing the possibility of 3 recall bias."</p>
<p>6 Q. Recall bias can distort a scientific 7 evaluation of whether an exposure is actually 8 related to a disease; correct? 9 A. Yes.</p>	<p>4 Did you write that? 5 A. Yes.</p>
<p>10 Q. For example, recall bias could distort 11 results if women with ovarian cancer were more 12 likely to remember their exposure to talc than 13 women without ovarian cancer; correct? 14 A. Yes. I mean, but the extent here is 15 quite minimal, because we don't see it with a -- 16 you know, for daily use, you know, the likely 17 magnitude is small. We've talked about that.</p>	<p>15 A. Yeah. Because, you know, you're not 16 stimulating them to answer -- you know, if you're 17 asking them ten questions about, say -- so it's 18 like, well, were you -- you know, were you 19 active, were you using oral contraceptives, were 20 you -- so if you are -- let me finish. Let me 21 finish my explanation.</p>
<p>21 You know, if recall bias was operational, we 22 would see it with nongenital talc use. They 23 would be reporting that. And we would be seeing 24 it with other types of, you know, cancer beyond, 25 you know, ovarian.</p>	<p>22 You're introducing the question of talc use 23 within ten different questionnaires, then you 24 minimize the possibility of recall bias for that 25 particular product versus you're asking talc alone.</p>
<p>26 So, yes, recall bias is a potential, but the 27 likely magnitude is small.</p>	<p>26 Q. On what literature are you relying to 27 say that asking about other risk factors minimizes recall bias as to another risk factor?</p>
<p>28 Q. On Page 54, Paragraph 6 of your</p>	<p>28 A. I mean, that's just my general understanding of epidemiology. And maybe, you</p>
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<p>1 report -- do you have Page 54, Paragraph 6? 2 A. Yeah. Just to clarify on the question, 3 I disagree with Rothman. So just because it's in 4 Rothman's study, doesn't mean that it's, you know 5 --</p>	<p>1 know -- yeah, it's not -- I don't know if it's 2 specific to talc usage. Just a general 3 understanding of epidemiology, about, you know -- 4 yeah, recall bias.</p>
<p>6 Q. I have a new question. Are you ready? 7 A. No. I mean, I have to finish my last 8 question.</p>	<p>5 Q. Are you done? 6 A. Yeah.</p>
<p>9 Q. I didn't ask you a question. 10 A. Okay. Because we are still on the 11 topic of recall bias.</p>	<p>7 Q. All right. Let's look at the effects 8 of recall bias in a study on talcum powder use in 9 ovarian cancer.</p>
<p>12 Q. I asked the question. 13 A. Okay. 14 Q. Recall bias could distort results of 15 women with ovarian cancer were more likely to 16 remember their exposure to talc than women 17 without ovarian cancer; correct? 18 A. Yes.</p>	<p>10 Are you familiar with the Schildkraut 2016 11 study? 12 A. Yes. 13 Q. That was one of the studies that you 14 relied on in forming your opinions; is that 15 right? 16 A. Yes. 17 MR. ZELLERS: Let's mark that study as 18 Deposition Exhibit 29. 19 (Article entitled "Association 20 between Body Powder Use and Ovarian Cancer: 21 The African American Cancer Epidemiology 22 Study (AACES) marked Exhibit 29.)</p>
<p>20 Q. The next question is: Can you turn to 21 Page 54, Paragraph 6 of your report? 22 A. Okay. 23 Q. You state, "case-control studies are 24 susceptible to recall bias, particularly when 25 data on exposure are self-reported. However, several studies have included these questions on</p>	<p>23 MS. PARFITT: Got it. Thanks. 24 BY MR. ZELLERS: 25 O. This is a study titled "Association</p>

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<p>1 Between Body Powder Use and Ovarian Cancer; The 2 African American Cancer Epidemiology Study"; 3 correct?</p> <p>4 A. Yes.</p> <p>5 Q. The study looked at, among other 6 things, what impact, if any, lawsuit filings in 7 2014 had on whether women recalled using talc in 8 the past; correct?</p> <p>9 A. Yeah. It examined the issue of 10 stimulated reporting. And I note it in my 11 report. I don't -- I don't discount that in my 12 discussion of the Schildkraut study.</p> <p>13 Q. We'll call it Schildkraut. Can we do 14 that?</p> <p>15 A. Whatever. I don't know.</p> <p>16 Q. The authors in that study, Exhibit 29, 17 thought that the publicity from lawsuits might 18 influence the participants' recall of prior body 19 powder use; is that right?</p> <p>20 MS. PARFITT: Objection.</p> <p>21 A. Yes. And I noted on Page 45 of my 22 report that although there was some evidence that 23 there was more reporting after class action 24 lawsuits in 2014, recall bias alone is 25 insufficient because there is a statistically</p>	<p>1 that they used talc on their genitals was 2 34 percent; is that right?</p> <p>3 A. Where is that? Yeah.</p> <p>4 Q. The percentage of cases, meaning women 5 with ovarian cancer, that said that they used 6 talc on their genitals was 36.5 percent; is that 7 right?</p> <p>8 A. I'm just looking at this. Give me a 9 second.</p> <p>10 36 -- interview data after 2004?</p> <p>11 Q. No. My question here is: For women 12 who were interviewed before 2014 --</p> <p>13 A. Mm-hmm.</p> <p>14 Q. -- the control, so women without 15 ovarian cancer, they stated they used talc on 16 their genitals, 34 percent; is that right?</p> <p>17 A. Yes.</p> <p>18 Q. For that same time period, women 19 interviewed before 2014 --</p> <p>20 A. Mm-hmm.</p> <p>21 Q. -- with ovarian cancer that said that 22 they used talc on their genitals was 23 36.5 percent.</p> <p>24 A. Yes.</p> <p>25 Q. Is that right?</p>
<p>1 significant risk both before and after 2014. But 2 the authors did, you know, think it was an 3 important thing to look at.</p> <p>4 Q. The authors looked at this and tried to 5 study this; is that right?</p> <p>6 A. Yes.</p> <p>7 Q. All right. Go to Page 4, Table 2 of 8 the Schildkraut paper. Tell me when you have it.</p> <p>9 A. I do.</p> <p>10 Q. This is a table, Adjusted Odds Ratios 11 for the Associations Between Mode, Frequency and 12 Duration of Body Powder Use and Ovarian Cancer; 13 is that right?</p> <p>14 A. Yes.</p> <p>15 Q. The second column shows the number of 16 cases. That's women with ovarian cancer; 17 correct?</p> <p>18 A. Yes.</p> <p>19 Q. The third column shows the controls. 20 That's the women who do not have ovarian cancer; 21 correct?</p> <p>22 A. Yes.</p> <p>23 Q. Looking at the data, before 2014, 24 before the lawsuits, the percentage of controls, 25 meaning women without ovarian cancer, who said</p>	<p>1 So roughly the same reporting of genital 2 talc use between women with and without ovarian 3 cancer occurred before the lawsuits were filed in 4 2014.</p> <p>5 MS. PARFITT: Objection.</p> <p>6 Q. Correct?</p> <p>7 A. I don't know the timing of lawsuits, 8 but yes, 2014.</p> <p>9 Q. So then let's look at what happened 10 after the lawsuits were filed.</p> <p>11 After 2014, what percentage of women without 12 ovarian cancer said that they used talc on their 13 genitals?</p> <p>14 A. The case -- are you talking about cases 15 or controls?</p> <p>16 Q. Yeah. I'm talking about controls.</p> <p>17 A. 34.4, 34.4.</p> <p>18 Q. So based on this data, the lawsuits had 19 essentially no effect on how many of the women 20 without ovarian cancer, the controls, remembered 21 or recalled using baby powder; correct?</p> <p>22 A. Yes.</p> <p>23 Q. It was 34 percent before 2014 and 24 34.4 percent after; is that right?</p> <p>25 A. Yes.</p>

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<p>1 Q. For women with ovarian cancer, before 2 the lawsuits were filed, 36.5 percent of them 3 said they recalled using baby powder; correct? 4 A. Yes. 5 Q. But after the lawsuits were filed, the 6 percent of women with ovarian cancer who said 7 they used baby powder went up to 51.5 percent; is 8 that right? 9 A. Yes. 10 Q. So after the lawsuits were filed, the 11 percent of women with ovarian cancer who said 12 they used baby powder jumped by over 40 percent; 13 is that right? 14 MS. PARFITT: Objection. Form. 15 A. By 40 percent? Where is 40? 16 Q. A difference between the 36. -- 17 A. 10 percent. It's 51 and 34. Right? 18 Q. It jumped -- I don't have a calculator. 19 A. You're subtracting 51 to 36 or 51 to 20 34? 21 Q. Well, there was -- 22 A. Sorry. 23 Q. That's okay. It's late. 24 There was a significant increase -- 25 A. There was an increase.</p>	<p>1 action lawsuits in 2014, recall bias alone is 2 insufficient to explain these findings, because 3 there was a statistically significant increased 4 risk both before and after 2014." 5 Is that what you state? 6 A. Yeah. 7 Q. Let's look at what the study actually 8 shows. So go to -- 9 A. Yeah. I correct it. Should be there 10 was an excess risk, because there was no 11 statistically significant. 12 Q. Your report is in error; is that right? 13 MS. PARFITT: Objection. 14 A. Well, it should be corrected to an 15 excess risk. 16 Q. It is not, and there is not a 17 statistically significant risk; is that right? 18 MS. PARFITT: Objection. Form. 19 A. Yeah. The test for effect modification 20 by year of interview was technique, but the 21 particular estimate for above -- for, you know, 22 for before 2014 was not significant. 23 Q. Exactly. So pre-2014, there was an 24 odds ratio of 1.19 with a confidence interval 25 ranging from .87 to 1.63; is that right?</p>
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<p>1 Q. -- from 36.5 percent before the 2 lawsuits were filed to 51.5 percent after; is 3 that right? 4 A. Yes. 5 Q. So, suddenly, women who had ovarian 6 cancer started reporting a higher incidence of 7 talc use than women had reported before 2014; is 8 that right? 9 MS. PARFITT: Objection. Form. 10 A. Yes. There was -- there was 11 incidence -- you know, evidence of stimulated 12 reporting. But that is just one element of 13 recall bias. That's not completely what is being 14 addressed in my statement on recall bias. This 15 is evidence about stimulated reporting, which is 16 one -- one spectrum of recall bias. 17 Q. It's at least an example of the 18 potential effect of recall bias; correct? 19 A. Yes. 20 Q. All right. Go to Page 45 of your 21 report, the last sentence. 22 A. Yes. 23 Q. "Although" -- and I'm quoting you. 24 "Although there was some evidence that there was 25 more reporting of genital powder use after class</p>	<p>1 A. Yeah. Yeah. 2 Q. That is not statistically significant; 3 is that right? 4 A. Yes. 5 Q. In the absence of statistical 6 significance, that can be indicative of no risk 7 existing; correct? 8 MS. PARFITT: Objection. Form. 9 A. Yeah. But, you know, I'm opining on 10 the study as a whole. That's just one element of 11 stimulated reporting in that study, you know. 12 Yeah. So there's an excess risk, which is in the 13 same direction, but not statistically 14 significant. 15 Q. If the study had ended before 2014, it 16 would have found no statistically significant 17 relationship between talcum powder and ovarian 18 cancer; is that right? 19 A. I'm not seeing the study. I have to 20 interpret the whole study; right? 21 Q. Well, based upon this data that we just 22 looked at -- 23 A. Yeah. 24 Q. -- had the study ended before 2014, 25 there was not a statistically significant</p>

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<p>1 relationship between talcum powder use and 2 ovarian cancer; correct? 3 MS. PARFITT: Objection. Misstates the 4 data. 5 A. Yeah. There was an excess risk which 6 was not statistically significant. But, you 7 know, we are picking and choosing analysis by 8 2004. Again, we talked about we are choosing by 9 duration. You can pick any one of these analyses 10 to cite it. You have to look at the cumulative 11 evidence and the cumulative evidence from 12 meta-analyses. 13 Q. How did you account for this recall 14 bias in weighing the Schildkraut study? 15 MS. PARFITT: Object to the form. 16 A. So, again, I did not weigh one 17 individual study. My weight of evidence is based 18 on the meta-analysis and the cumulative evidence 19 from meta-analysis, the biological studies, 20 animal studies, human studies. 21 So, you know, I point out the limitations of 22 the individual studies, as do the authors of the 23 meta-analyses. 24 Q. Are your opinions in this matter 25 dependent on talcum powder containing asbestos?</p>	<p>1 reports for that. 2 Q. You have no personal expertise with 3 that; correct? 4 A. No. 5 Q. Did you consider any testing that found 6 no asbestos? 7 A. Yeah. I did. I think I'm citing the 8 FDA report in my assessment that there are 9 studies that suggest the -- I don't know if it's 10 an FDA report. It's an FDA study that talks 11 about it. 12 Q. If your assumption about contamination 13 of talcum powder products with asbestos were not 14 true, would your opinions in this case change? 15 MS. PARFITT: Objection. Form. 16 A. Well, again, you know, this is a weight 17 of evidence that, does it, you know, contain 18 talcum powder -- I mean -- does talcum powder 19 product contain asbestos? Or, you know, these 20 other metals we've talked about. 21 But my opinion was, in fact, arrived at 22 before even I was aware of both of the deposition 23 testimony, as well as the results of testing by 24 Dr. Luongo that my causal opinion was that they 25 caused, you know, ovarian cancer.</p>
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<p>1 A. No. I arrived at my causal opinion 2 independent of, you know, presence of asbestos 3 or, you know, or my understanding of the 4 constituents. But I asked to better understand 5 what are the constituents of, you know, talcum 6 powder products. 7 And I was, you know, some of the documents 8 and some of the literature even suggests and 9 shows that, and some of the testing and some of 10 the deposition testimony that I have been privy 11 to, suggests the presence of asbestos in talcum 12 powder product. 13 Q. Do you believe that talcum powder that 14 does not contain asbestos causes ovarian cancer? 15 A. Yes. 16 Q. Is it fair to say that you have not 17 made any independent determination as to whether 18 or not the talcum powder products manufactured by 19 J&J Consumer Products are contaminated with 20 asbestos? 21 A. Yes. I have not made a determination. 22 I've looked at the literature. I have looked at 23 the testimony of the experts that was provided, 24 and I've looked at testimony -- sorry -- the 25 report of Dr. Luongo and I have relied on their</p>	<p>1 MR. ZELLERS: Move to strike as 2 nonresponsive. I'm going to ask the question 3 again. 4 THE WITNESS: Sure. 5 BY MR. ZELLERS: 6 Q. If your assumption about contamination 7 of talcum powder products with asbestos were not 8 true, would your opinions in this case change? 9 A. No. 10 Q. In support of your opinion that talcum 11 powder products contain asbestos, you cite to 12 exhibits from the depositions of John Hopkins and 13 Julie Pier; is that right? 14 A. Yes. 15 Q. Are you aware that those exhibits were 16 created by plaintiff attorneys? 17 MS. PARFITT: Objection. Misstates the 18 evidence. 19 A. Yeah. I mean, I asked them whatever 20 that -- you know, these are -- as I understand 21 them, they are, you know -- they are created as a 22 part of the testimony of these deponents on 23 behalf of, you know, the defendants. That's my 24 understanding. 25 Q. Were you told that the exhibits</p>

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<p>1 Exhibit 28 to the deposition of John Hopkins and 2 Exhibit 47 to the deposition of Julie Pier were 3 exhibits that were created by plaintiffs' 4 attorneys?</p> <p>5 MS. PARFITT: Objection. Completely 6 misstates the evidence in this case.</p> <p>7 A. You know. I asked for constituents. I 8 don't know what -- who created what. So I mean, 9 I'm not going to be able to answer that type of 10 question, who created this.</p> <p>11 I was asked for, you know, what are the 12 constituents, that can I learn more about this?</p> <p>13 Q. Outside of your work in litigation, do 14 you normally rely on documents created by 15 advocates in order to evaluate epidemiological 16 data?</p> <p>17 MS. PARFITT: Objection. Again, 18 misstates the evidence as to origin of the 19 Hopkins and Pier Exhibits 28 and 40.</p> <p>20 You may answer.</p> <p>21 A. Yeah. I mean, I do. As I said 22 earlier, I rely on our published data. And as 23 the Health Canada approach states, that we rely 24 on whatever evidence becomes available, and, A, 25 is relevant to the particular testimony.</p>	<p>1 than from communicating with plaintiffs' counsel?</p> <p>2 A. I'm not sure what -- so --</p> <p>3 MS. PARFITT: I'm going to object to 4 the form.</p> <p>5 Q. Sure. The source of data?</p> <p>6 A. Like source of --</p> <p>7 Q. I'm asking you if you know where the 8 data in those exhibits came from.</p> <p>9 A. So I'll try to answer to the best of my 10 ability.</p> <p>11 My understanding is that the data on J&J and 12 Imerys were from mines tested over the years, 13 ranging, you know, from several decades. And 14 that contained or -- you know, were contaminated 15 with asbestos, various fibers that were created.</p> <p>16 And the second was the Luongo report was 17 products that were purchased and that were tested 18 in the laboratory. So that's where the source. 19 I mean, I assume these other two sources.</p> <p>20 Q. Have you made any effort to investigate 21 the alternative explanations for the data in 22 those charts, Exhibit 28 and Exhibit 47?</p> <p>23 A. I mean --</p> <p>24 MS. PARFITT: Objection.</p> <p>25 A. So, for example, I think that those</p>
<p>1 And, importantly, just as my causal opinion 2 was arrived at independent of the constitution of 3 asbestos in talc, Health Canada also is unaware 4 of the presence of -- or at least, you know, they 5 haven't assessed the presence of asbestos in 6 talc, and they are, you know, both congruent.</p> <p>7 Q. Your testimony is that outside of your 8 work in litigation, that you normally do rely on 9 data and documents created by plaintiffs' 10 counsel?</p> <p>11 MS. PARFITT: Objection. Form. Asked 12 and answered. And misstates the evidence.</p> <p>13 A. So I, you know, rely on evidence that's 14 available in terms of epidemiologic evidence. 15 And my testimony on asbestos was based on testing 16 and based on -- testing by -- based on some of, 17 you know, there are studies which suggest the 18 presence of asbestos.</p> <p>19 Q. Do you know where the data in 20 Exhibit 28 to Hopkins and Exhibit 47 to Pier came 21 from?</p> <p>22 A. You know, I was seeing these were in 23 various mines conducted. That's my 24 understanding.</p> <p>25 Q. Do you have an understanding, other</p>	<p>1 data are, as I said earlier, my causal opinion 2 is -- is, you know, this is only a -- my causal 3 opinion is only -- you know, this is only a small 4 link in my causal opinion between talc and 5 ovarian cancer, and it's not predicated on the 6 presence of asbestos.</p> <p>7 I don't have the expertise to determine 8 whether asbestos is present.</p> <p>9 Q. I'm trying to make it a simple 10 question. I'm just trying to find out what you 11 did and what you did not do.</p> <p>12 Did you make any effort to investigate the 13 alternative explanations for the data in the 14 charts which are marked as Exhibit 28 and 15 Exhibit 47?</p> <p>16 A. So --</p> <p>17 MS. PARFITT: Objection.</p> <p>18 A. What is 28, 47?</p> <p>19 MS. PARFITT: Yeah. Let's get them. 20 Do you have a copy of them here to show --</p> <p>21 MR. ZELLERS: No.</p> <p>22 MS. PARFITT: You aren't going to show 23 it to him?</p> <p>24 MR. ZELLERS: He cites to these in his 25 report.</p>

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<p>1 MS. PARFITT: Then let's get them. 2 We'll get them. Give him a moment. 3 MR. ZELLERS: We don't need to get them 4 to answer this question. 5 MS. PARFITT: Do you need them, 6 Dr. Singh? 7 THE WITNESS: Yes. 8 MS. PARFITT: Do you want to take a 9 quick break? 10 MR. ZELLERS: And I object. And this 11 should not be time that gets charged me. 12 BY MR. ZELLERS: 13 Q. My question simply is: Did he attempt 14 to investigate any alternative causes. He can 15 either say yes, he can say no, or he can say I 16 don't recall. 17 A. Yes. 18 Q. All right. What did you do to 19 investigate alternative explanations? 20 A. I mean, you know, I was looking at 21 the -- I was already looking at the published 22 literature, but beyond that, I was looking at 23 what are the alternate -- again, as I said, you 24 know, my expertise in determining -- I'm not a 25 mineralist that I can, you know, that I can</p>	<p>1 knowledge on these issues; correct? 2 A. Yeah. I mean, for my purpose, you 3 know, it was more an understanding of the 4 constituents, whether that would provide, you 5 know, proof against biologic plausibility, proof 6 for biologic plausibility. 7 So, for example, you say, did I undertake 8 attempts to understand the constituents? Yes. I 9 mean, I was looking for, well, are there some 10 antioxidants that, if you had some antioxidants 11 in that product, and I'm not aware of, or anti, 12 you know, carcinogens and maybe these scientists 13 will be able to provide that. 14 Q. Did you ask counsel for plaintiffs for 15 any information or testimony from either J&J 16 company folks or Imerys scientists as to what the 17 tests actually showed with respect to asbestos? 18 MS. PARFITT: Other than Exhibits 28 19 and 47? 20 A. I assume those testifying were J&J 21 scientists and Imerys, and they were speaking 22 about those tests. 23 Q. My question is: Did you ask for any 24 additional information? 25 A. No. I mean, I asked -- as I said, I</p>
<p style="text-align: center;">Page 279</p> <p>1 determine that. And, again, I'm not opining that 2 Dr. Luongo's report -- I mean, he will have to 3 vouch for his report. 4 Q. Let me ask it a different way. 5 A. Yeah. 6 Q. If scientists from the J&J companies 7 and Imerys scientists say that those tests don't 8 actually show asbestos, it was just tremolite 9 reported, for example, you have no expertise to 10 dispute that; correct? 11 MS. PARFITT: Objection. Misstates the 12 evidence in this case, entirely. 13 Do you want to ask him a hypothetical? 14 Q. It's a hypothetical question. 15 MS. PARFITT: It's a hypothetical. 16 A. Again, with my limited expertise and my 17 understanding of whatever I was provided and 18 cited there, my understanding was that there was 19 asbestos present in there and, you know, other 20 people can have different opinions and I think 21 mineralogists, geologists will -- 22 Q. Those are the -- 23 A. Yeah. 24 Q. -- expertise or the -- those are the 25 types of experts that would have substantive</p>	<p style="text-align: center;">Page 281</p> <p>1 asked about the causal question and I got what I 2 got. We can go about it in various ways. 3 Like did I ask again? No, I didn't. And I 4 don't want any more documents. 5 Q. We'll try to shortcut this. 6 Do you believe Luongo? You reviewed his 7 testimony; right? 8 MS. PARFITT: Objection. Form. 9 Go ahead. 10 A. Yeah. It's like how do you believe, 11 you know -- again, it's an area of expertise. He 12 tests, you know, these products, you know, this 13 is not my area of experience. At least based on 14 his testing, there is presence of asbestos in 15 my -- and provides additional support. 16 Q. Did you look at any of the experts for 17 the defendants who have opined to the opposite 18 statement or the opposite? 19 MS. PARFITT: I think -- objection. 20 A. I was told that the expert defendants 21 hadn't even been -- you know, haven't submitted 22 reports or haven't been, you know, opined on. 23 That's sort of my understanding. 24 Q. You believed and accepted the Luongo 25 testing for purposes of this case; is that right?</p>

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<p>1 MS. PARFITT: Objection. Misstates the 2 heart of his testimony. 3 A. So, first of all, this report is 70 4 whatever pages. Luongo is maybe a paragraph or 5 two. So, yes, I believe that was one study. 6 For the purposes of, you know, identifying, 7 you know, I identified his. I identified what 8 was shown and what was in those notes. And I 9 identified some epidemiologic -- I mean, some 10 findings in the published literature. 11 I mean, that's as much as I could know about 12 it. I mean, you had Routers' study, you know, 13 talking about it in the media. So there's lots 14 of different things. 15 I didn't go and, you know, go looking into 16 the Routers report. Maybe that's what I should 17 be looking at. 18 Q. You did not confirm that any of the 19 talc samples mentioned in those charts were 20 actually from talc that was used in baby powder; 21 correct? 22 MS. PARFITT: Objection. Misstates the 23 evidence that was available to him. If you want 24 to show him the charts, you can do it. 25 Q. Can you answer that question?</p>	<p>1 I'm not trying to slow you down. 2 MR. TISI: And you said you think he 3 was. 4 MR. ZELLERS: Yes. And it was in jest, 5 Counsel. We all chuckled and we all laughed. 6 MR. TISI: As long as it was in jest, 7 that's fine. 8 THE WITNESS: I took it to be in jest. 9 I know I reviewed one, but I'm just 10 trying to see if I reviewed another one. There 11 was -- yeah. 12 So I said, No. 30 and then 31, 32, two 13 additional reports. Sorry. 14 Q. Have you ever met Luongo? 15 A. I don't know him. 16 Q. Do you know his qualifications? 17 A. No. 18 Q. Had you ever heard of him before you 19 got involved in this MDL talc ovarian cancer 20 litigation? 21 A. No. 22 Q. Have you reviewed any Luongo testing 23 where he did not find asbestos? 24 A. These were the three reports I 25 reviewed. So I don't know if he has conducted</p>
<p>1 MS. PARFITT: Objection. 2 A. I did not confirm it myself. 3 Q. You realize that the vast majority of 4 talc isn't even used for body powder; correct? 5 MS. PARFITT: Objection. Misstates the 6 evidence. 7 A. I realize that -- yeah, I don't know 8 what -- you know, there are various other uses of 9 talc. 10 Q. Do you also rely on -- well, strike 11 that. 12 How many Luongo reports have you reviewed? 13 A. I just have to take a look. I know 14 that I reviewed one. And I'm not trying to slow 15 you down. I'm just trying to be accurate. 16 Q. I think you are, but -- 17 MS. PARFITT: Objection to the 18 characterization, Counsel. 19 A. I'm trying to find this. 20 MS. PARFITT: He's acted in a 21 professional way throughout all this, so it's 22 good. 23 MR. TISI: You asked him questions 24 looking at his report. 25 MR. ZELLERS: The witness said to me,</p>	<p>1 additional testing. 2 Q. Let me ask again. Have you reviewed 3 any Luongo testing where he did not find 4 asbestos? 5 A. I did not review any additional beyond 6 what is cited here. 7 Q. Have you reviewed the FDA's testing of 8 talcum powder products? 9 A. I have cited it. I mean, I have not 10 reviewed the specific test, but I have, you know, 11 cited what -- what they -- what they found. 12 Q. Have you made any effort to quantify 13 the amount of any alleged contaminant in the 14 Johnson & Johnson Consumer Products talcum powder 15 products? 16 A. That's way beyond my expertise. 17 Q. Is any amount safe? 18 MS. PARFITT: Objection. 19 A. Well, as of my understanding that 20 asbestos, you know, any amount of asbestos is not 21 safe, that's my understanding. And, obviously, 22 others can -- 23 Q. Do you defer to other experts on that 24 issue? 25 A. Yeah. But, you know, my understanding</p>

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<p>1 is that any amount -- and I think there's some 2 testimony from others to that effect as well. 3 But I'll defer to others.</p> <p>4 Q. Do you have an opinion on what type of 5 asbestos is in the baby powder products?</p> <p>6 A. Again, you know, this whole -- you 7 know, this sort of questions around constituents 8 of the product, for me, it was more trying to 9 understand whether it's asbestos or any other 10 constituents in the product, provide evidence in 11 support or against.</p> <p>12 I can't tell you what amount would cause or, 13 you know, not cause baby -- in baby powder will 14 cause ovarian cancer.</p> <p>15 Q. What types of asbestos are associated 16 with ovarian cancer?</p> <p>17 A. I haven't done a causal analysis of 18 asbestos and ovarian cancer. I know that the 19 IARC has classified asbestos as a carcinogen, 20 Grade 1, and that also stated that it caused 21 ovarian cancer, but -- about asbestos and fibrous 22 talc, but obviously others will provide more -- 23 more specifics.</p> <p>24 Q. Do you have any -- strike that.</p> <p>25 Do you have knowledge as to the different</p>	<p>1 at meta-analysis that, you know, cause, as well 2 as the IARC report that, you know, talks about 3 asbestos and fibrous talc as a carcinogen and 4 also cites studies that show that asbestos causes 5 ovarian cancer. But, again, I wasn't doing a 6 formal causal analysis.</p> <p>7 Q. Do you agree that research on the 8 potential relationship between asbestos and 9 ovarian cancer has only considered a small number 10 of cases?</p> <p>11 MS. PARFITT: Objection. Form.</p> <p>12 A. I mean, ovarian cancer is a rare, rare 13 disease. And, you know, it's going to be a small 14 number of cases, regardless of etiology, what 15 they are trying to study.</p> <p>16 Q. How many of the studies involve 17 occupational exposure?</p> <p>18 A. I think the predominant --</p> <p>19 MS. PARFITT: Objection.</p> <p>20 A. -- studies have involved occupational 21 exposure.</p> <p>22 Q. How many were nonoccupational, if any?</p> <p>23 A. I don't recall the numbers.</p> <p>24 Q. Did any of the nonoccupational asbestos 25 studies reach statistical significance?</p>
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<p>1 types of asbestos?</p> <p>2 A. No.</p> <p>3 Q. What dose of asbestos is associated 4 with ovarian cancer?</p> <p>5 A. I have not evaluated the dose of 6 asbestos with ovarian cancer.</p> <p>7 Q. What type of ovarian cancer is asbestos 8 associated with?</p> <p>9 A. I have not -- as I said earlier, I have 10 not evaluated the specific causal link between 11 asbestos and ovarian cancer. My causal question 12 was, does talcum powder products cause ovarian 13 cancer. And whatever the constituents are, you 14 know, whether they provide evidence in support or 15 against. And, as you said, there may be 16 additional testing.</p> <p>17 Q. Does the type of ovarian cancer vary 18 based upon the type of asbestos?</p> <p>19 A. Again, I didn't evaluate that -- that 20 body of evidence.</p> <p>21 Q. Did you evaluate studies that have 22 explored the potential link between asbestos and 23 ovarian cancer?</p> <p>24 A. Yeah. I mean, I didn't, again, 25 evaluate the causal link between that. I looked</p>	<p>1 MS. PARFITT: Objection. Form.</p> <p>2 A. Again, I would have to look at the 3 study that you're talking about. And I just -- I 4 can't recall it off the top of my head.</p> <p>5 Q. Can you tell how many women were 6 studied?</p> <p>7 A. No, I can't. I mean, you can't ask 8 questions about these things, and tell me how 9 many women. No. You have to show me the study 10 if you want to go down that line of questioning.</p> <p>11 Q. I'll show you a study.</p> <p>12 A. Sure.</p> <p>13 Q. Are you familiar with the Reid study 14 published May 24th of 2011?</p> <p>15 A. Yes.</p> <p>16 Q. It's one of the studies you looked at; 17 is that right?</p> <p>18 A. Yes.</p> <p>19 MR. ZELLERS: We'll mark that as 20 Exhibit 30.</p> <p>21 (Article entitled "Does Exposure 22 to Asbestos Cause Ovarian Cancer? A 23 Systematic Literature Review and 24 Meta-analysis" marked Exhibit 30.)</p> <p>25 MS. PARFITT: Thank you.</p>

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<p>1 THE WITNESS: Can you repeat the 2 question for me? 3 MR. ZELLERS: Sure. 4 THE WITNESS: I'm sorry. 5 BY MR. ZELLERS: 6 Q. Go to the first page, the right column. 7 A. Mm-hmm. 8 Q. Reid. And this article is entitled 9 "Does Exposure to Asbestos Cause Ovarian Cancer?" 10 Is that right? 11 A. Yes. 12 Q. The authors state, on the first page, 13 on the right-hand side, right above the No. 1 and 14 No. 2, "Studies that have examined this issue 15 have been limited for two major reasons. No. 1, 16 small number of cases"; is that right? 17 A. Yes. 18 Q. The authors state, "Much fewer women 19 than men have been exposed to asbestos, 20 particularly in more heavily exposed occupational 21 settings where relative risks are higher." 22 You agree with that; correct? 23 A. Yes. 24 Q. Then the second major limitation deals 25 with difficulties of diagnosis; is that right?</p>	<p>1 Where are you pointing to? 2 MR. ZELLERS: Sure. I'm looking at 3 the -- 4 MS. PARFITT: Thank you. 5 MR. ZELLERS: -- No. 2. 6 MS. PARFITT: Uh-huh. 7 MR. ZELLERS: The last full sentence. 8 MS. PARFITT: Thank you. I appreciate 9 it. 10 MR. ZELLERS: On Page -- first page of 11 the article. 12 MS. PARFITT: Thank you. I appreciate 13 that. 14 MR. ZELLERS: Sure. 15 A. Yes. 16 Q. Have the studies addressed confounding 17 and independent risk factors? 18 A. Well, again, you know, my examination 19 of asbestos -- I mean, I was not trying to 20 establish a causal link between asbestos and 21 ovarian cancer, you know, when in trying to look 22 at talcum powder products and ovarian cancer, you 23 know, one of the questions was constituents. 24 And, you know, the IARC agrees that, or at 25 least opines that it is, causally, is a</p>
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<p>1 A. Yes. 2 Q. Are you aware of the difficulties that 3 have existed over time in distinguishing between 4 peritoneal mesothelioma and ovarian cancer? 5 A. Yes. As a general idea of -- you know, 6 because they share histologic similarities. 7 Q. Did those difficulties affect the 8 reliability of the studies? 9 A. Yes, but if you look at Table 2 of that 10 report, you see that, despite if you look at 11 studies that review the ovarian pathology, you 12 still see a statistically significant increased 13 risk of incidence of mortality from ovarian 14 cancer. So, yes, overall studies, it's a higher 15 estimate, but even if you take into account 16 mesothelioma diagnoses and misclassification, you 17 still cannot, you know, account that -- we still 18 are left with that asbestos causes, you know, 19 ovarian cancer. 20 Q. The authors of the Reid paper that you 21 reviewed and relied on, Exhibit 30, stated, "It 22 has been particularly difficult to distinguish 23 between peritoneal mesothelioma and ovarian 24 serous carcinoma"; is that right? 25 MS. PARFITT: Counsel, I'm sorry.</p>	<p>1 carcinogen and lists that and lists the Kamargo 2 study as, you know, that asbestos causes ovarian 3 cancer. 4 Q. Well, the Camargo 2011 study 5 acknowledges an inability to account for 6 nonoccupational risk factors for ovarian cancer 7 other than age; correct? 8 A. Again, if I can -- 9 Q. Take a look. Sure. 10 A. These statements -- it's getting to the 11 end of the day, so... 12 MR. ZELLERS: Deposition Exhibit 31. 13 (Article entitled "Occupational 14 Exposure to Asbestos and Ovarian Cancer: A 15 Meta-analysis" marked Exhibit 31.) 16 BY MR. ZELLERS: 17 Q. Deposition Exhibit 31 is the Kamargo 18 paper; is that right? 19 A. Yes. 20 Q. This is another paper that you have 21 reviewed? 22 A. Yes. 23 Q. On the first page, the overview -- 24 A. Yes. 25 Q. -- it states, "Objective: A recent</p>

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<p>1 monograph working group of IARC conducted" -- or 2 strike that -- "concluded that there is 3 sufficient evidence for a causal association 4 between exposure to asbestos and ovarian cancer. 5 We performed a meta-analysis to quantitatively 6 evaluate this association." 7 Is that right? 8 A. Yes. 9 Q. If you look at Page 1216, middle 10 column -- are you there? 11 So I'm looking at the second full paragraph 12 above "conclusion." 13 "A further limitation of our analysis was 14 its inability to account for nonoccupational risk 15 factors for ovarian cancer other than age." 16 Do you see that? 17 A. And what do you mean by that? I mean, 18 I didn't -- again, you know, I -- 19 Q. Let me just ask. Is that a 20 limitation -- 21 A. Yeah. 22 Q. -- on the analysis? 23 A. It is a limitation. 24 Q. Hasn't failure to account for 25 misclassification and known risk factors been</p>	<p>1 Q. And you're not making a causal 2 assessment or determination -- 3 A. No. 4 Q. -- on asbestos; is that right? 5 A. Yes. 6 Q. Okay. Under "discussion," Page 1215 -- 7 A. And I'm going to take a break after 8 that whenever you're done. I'm sorry. I need to 9 use the restroom. 10 Q. That's okay. That's fine. That's 11 fine. 12 Do you see under "discussion," this is on 13 the left-hand column, second full paragraph, 14 where they're talking about Edelman? 15 A. Yes. 16 Q. And the authors state, "They concluded, 17 however, that despite the positive and 18 significant association, there was insufficient 19 information to infer that ovarian cancers were 20 caused by occupational exposure to asbestos 21 because of concerns about tumor 22 misclassification, inappropriate comparison 23 populations and the failure to take into account 24 for known risk factors." 25 Is that --</p>
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<p>1 cited as a reason why causality cannot be 2 established? 3 MS. PARFITT: Objection. 4 A. We can't rely on IARC. As you said, 5 one said that it is possibly associated and here, 6 when they haven't arrived at a -- I mean, 7 causality is just not about association in one. 8 I mean, they have to look at other biological 9 mechanisms of asbestos and ovarian cancer, you 10 know, what happens in the lab, what happens -- I 11 haven't done that evaluation. 12 So, yes, this is a limitation. But this 13 needs to be taken into account with, you know, 14 the entire body of evidence on asbestos and 15 ovarian cancer. 16 Q. You're looking at and relying on 17 papers, including Reid, Exhibit 30? 18 A. The IARC monographs. 19 Q. And Kamargo, Exhibit 31; is that right? 20 A. Yes. And, again, I'm clarifying that 21 I'm not making a causal determination on IARC, 22 you know. I'm just relying on that, you know, 23 that I'm not -- first of all, I didn't set out to 24 make a causal determination on asbestos and 25 ovarian cancer.</p>	<p>1 A. Again -- 2 Q. You don't disagree with that, do you? 3 A. Yeah. I mean, I don't -- but I don't 4 disagree -- I mean, I'm relying on the IARC 5 assessment and others that, you know, there's a 6 causal association between exposure. Again, I 7 did not review. I would have gotten and reviewed 8 evidence, Edelman and White and others, if I had 9 to do it over again. 10 MR. ZELLERS: Let's take a break. 11 We'll come back and I'll finish up. Thank you. 12 THE VIDEOGRAPHER: Off the record, 13 3:32 p.m. 14 (A recess was taken.) 15 THE VIDEOGRAPHER: Here begins Media 16 No. 5 in today's deposition of Sonal Singh, MD, 17 M.P.H. Back on the record, 3:43 p.m. 18 BY MR. ZELLERS: 19 Q. Dr. Singh, do you agree that exposure 20 to asbestos through perineal cosmetic talc use, 21 assuming the talc contains asbestos fibers, is 22 different than the heavy occupational exposure 23 that's primarily been researched? 24 MS. PARFITT: Objection to form. 25 A. Again, you know, I've not professed to</p>

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<p>1 be an expert in different kinds and routes of 2 asbestos exposure. My -- my sort of -- at least 3 my understanding of my causal question was 4 exposure to talcum powder products and ovarian 5 cancer and whether the constituents can provide 6 evidence in support or refute that association. 7 So, you know, whether asbestos exposure, 8 what different kinds, others will opine on that. 9 Q. Do you know what a cleavage fragment 10 is? 11 A. No. And we can go on on this kind of 12 stuff, and I'll say no. 13 Q. Do you know how it differs from an 14 asbestos fiber? 15 A. No. And I'm not a mineralogist. 16 Q. If I ask you a whole line of questions 17 about different types of asbestos, you're going 18 to defer to other folks? 19 A. Yes. 20 Q. Is there any epidemiology 21 substantiating the theory that fragrance 22 ingredients can cause ovarian cancer? 23 A. I'm not aware of such studies. 24 Q. Is there any epidemiology 25 substantiating the theory that exposure to trace</p>	<p>1 may do testing and provide antioxidants and 2 substances which reduce the risk. So that will 3 have to be weighed. 4 But I am not providing that causal link 5 between the individual constituent and ovarian 6 cancer. 7 Q. And that would be true for any of the 8 individual fragrance chemicals and heavy metals 9 that may be present in the baby powder; correct? 10 MS. PARFITT: Objection. 11 A. I don't have that area of expertise on 12 individual constituents in products. 13 MR. ZELLERS: I have no further 14 questions. Thank you. 15 THE WITNESS: Thank you for your time. 16 (Discussion off the record.) 17 THE WITNESS: Thank you. 18 MR. ZELLERS: Thank you, Doctor. 19 MR. KLATT: Give me a minute to get 20 organized here, Doctor. 21 THE WITNESS: Sure. 22 MR. KLATT: Are we off the record? 23 THE VIDEOGRAPHER: No. 24 MR. LOCKE: Let's go off the record, 25 then.</p>
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<p>1 amounts of the heavy metals at issue can cause 2 ovarian cancer? 3 A. I'm not aware of -- you know, again, I 4 didn't do the evaluation, trace the specific 5 constituents of ovarian cancer. I just was 6 trying to understand the constituents, what are 7 they. I just, you know, whether trace -- trace 8 elements cause inflammation and -- you know, but 9 I am not aware of studies that link them directly 10 to ovarian cancer. 11 Q. You're not opining in this case that 12 the fragrance chemicals and heavy metals that may 13 be present in baby powder are causally associated 14 with ovarian cancer. 15 MS. PARFITT: Objection. 16 Q. Correct? 17 MS. PARFITT: Form. 18 A. Yes. I'm not -- again, I'm not opining 19 on the individual constituents of talcum powder 20 products. My opinion is, you know, I look at the 21 exposure and the exposure is talcum powder 22 products, and the presence of constituents, some 23 of which are identified as, you know, Grade 1 24 carcinogens, others as Grade 2, provide evidence 25 in support, and others may -- you know, others</p>	<p>1 THE VIDEOGRAPHER: Off the record, 2 3:47 p.m. 3 (A recess was taken.) 4 THE VIDEOGRAPHER: Back on the record, 5 3:51 p.m. 6 CROSS-EXAMINATION 7 BY MR. KLATT: 8 Q. Good afternoon, Dr. Singh. My name is 9 Mike Klatt, and I represent Imerys Talc America 10 in this case. 11 Have you ever heard of Imerys Talc America 12 before you got involved in this case? 13 A. I have, but, you know, I don't know in 14 what context and what, you know. 15 Q. Do you know what Imerys Talc America 16 does? 17 A. I don't know all the details of the 18 activities or, you know, Imerys. 19 Q. As you know, Mr. Zellers has covered a 20 fair amount of ground already. And so I'm going 21 to skip around just to ask you some follow-up 22 questions. 23 You said earlier today, when you were 24 talking to Mr. Zellers, that you potentially 25 intended to write up something about talc and</p>

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<p>1 ovarian cancer?</p> <p>2 A. Sure.</p> <p>3 Q. And I just wanted to get a better</p> <p>4 understanding of what you were referring to.</p> <p>5 A. Yeah. So after, sort of -- and I'm not</p> <p>6 going to do it until this is all over, because I</p> <p>7 feel that there, you know, I have access to</p> <p>8 documents that are -- that are sort of protected</p> <p>9 by court order.</p> <p>10 But partly what I'm thinking of is -- like</p> <p>11 there have been so many systematic reviews and</p> <p>12 meta-analyses that I was thinking more on the</p> <p>13 kind of like an umbrella review of all these</p> <p>14 reviews that I cite in my report and with, you</p> <p>15 know, some of the rating of reviews.</p> <p>16 And then -- and that's sort of my thinking,</p> <p>17 was that what I would do is synthesize the</p> <p>18 evidence, that -- what I do best is synthesize</p> <p>19 the evidence from other studies in trying to --</p> <p>20 you know, so it would be separate from, like,</p> <p>21 because he asked the question, would you do a</p> <p>22 systematic review? You know, meta-analysis. No.</p> <p>23 Because there have been so many already.</p> <p>24 Q. Have you undertaken that project yet or</p> <p>25 is this just something you're thinking of?</p>	<p>1 subject; correct?</p> <p>2 MS. PARFITT: Objection. Form.</p> <p>3 A. I mean, depending -- I don't know the</p> <p>4 specifics on arrangement, but the question is,</p> <p>5 you know, as long as the disclosure is</p> <p>6 transparent, and as long as, you know, the</p> <p>7 funding mechanisms, what was the reasons, yeah.</p> <p>8 So it's not like they have commissioned this</p> <p>9 review.</p> <p>10 I mean, first of all, I have just thought</p> <p>11 about it. I haven't even done it. I'm not sure</p> <p>12 I'll do it with my time. But you would have to</p> <p>13 disclose that, yeah.</p> <p>14 Q. But my question, and, again, I think</p> <p>15 we'll go quicker if we just focus on the question</p> <p>16 asked and the answer to that question.</p> <p>17 But my question is: It's entirely</p> <p>18 appropriate for companies to contact and retain</p> <p>19 outside experts to advise them and then to</p> <p>20 publish articles in the literature.</p> <p>21 You've done it yourself; correct?</p> <p>22 MS. PARFITT: Objection. Form.</p> <p>23 You may answer.</p> <p>24 A. Yeah. I have actually been, you know,</p> <p>25 I have worked with Eli Lilly on systematic</p>
<p style="text-align: center;">Page 303</p> <p>1 A. Yeah. I'm thinking about --</p> <p>2 Q. I'm sorry. Let me finish.</p> <p>3 This is something you're just thinking about</p> <p>4 doing in the future?</p> <p>5 A. In the future. But I have</p> <p>6 conceptualized, if I were to do that, that's what</p> <p>7 I would do.</p> <p>8 Q. And if you do do that, you would be</p> <p>9 obliged, would you not, to disclose to whatever</p> <p>10 entity, body, journal, that you submitted this</p> <p>11 work to, that you had been a retained, paid</p> <p>12 expert by plaintiffs in the talc ovarian cancer</p> <p>13 litigation; correct?</p> <p>14 A. Yeah. And that's been my standard</p> <p>15 practice. If you go back and look at my papers,</p> <p>16 you know, my papers on SGLT2 inhibitors, I've</p> <p>17 disclosed that I was funded by, you know,</p> <p>18 Janssen. You know, a paper on statins that I</p> <p>19 wrote last year, I was a paid expert.</p> <p>20 So it's just standard practice for us to do</p> <p>21 that.</p> <p>22 Q. And now that you bring that up, there's</p> <p>23 absolutely nothing wrong with a company like</p> <p>24 Janssen or any other company hiring an outside</p> <p>25 expert to advise them and to publish on a certain</p>	<p style="text-align: center;">Page 305</p> <p>1 reviews of diabetes medications.</p> <p>2 And -- to a point of clarification, I was</p> <p>3 not paid by them, but I was an expert on that,</p> <p>4 which is sort of a strange arrangement; right?</p> <p>5 You don't get paid, but you're still working for.</p> <p>6 But, you know, that's my area of expertise. So,</p> <p>7 yeah, companies hire and that's how science</p> <p>8 works.</p> <p>9 Q. And, for example, if you contacted your</p> <p>10 institution, the University of Massachusetts</p> <p>11 Medical Center, about this ovarian cancer risk</p> <p>12 factors web pages that they have, and you had any</p> <p>13 input on that, you would disclose that you're a</p> <p>14 paid plaintiffs' expert in talc ovarian cancer</p> <p>15 litigation; correct?</p> <p>16 A. Well, so to do that, I don't know where</p> <p>17 that web page came from. I didn't contact them.</p> <p>18 Yes, but, you know, I'm not trying. So I don't</p> <p>19 know if you're thinking about like the up-to-date</p> <p>20 example. I didn't want to change. I was just</p> <p>21 providing them references.</p> <p>22 But, yes, if I was trying to make changes to</p> <p>23 a document that that's on, you know, I'm trying</p> <p>24 to write something up, then if you look at my</p> <p>25 letter, it's just a contact point. If I'm trying</p>

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<p>1 to write something up and say, you know what, it 2 increases the risk of cancer, decreases, then, 3 yes, I'd disclose that.</p> <p>4 Q. And just to go over that point -- 5 A. Yeah.</p> <p>6 Q. -- when you wrote the editor about Up 7 To Date, suggesting that they update their 8 website regarding talc and ovarian cancer, you 9 did not disclose that, at that time, you were a 10 paid retained plaintiffs' expert; is that 11 correct?</p> <p>12 A. Yes. But I asked them to clarify that 13 this was just to update the references, if you 14 look at them.</p> <p>15 Q. Now, going back to what this 16 conceptualizing you're having of potentially one 17 day publishing something about talc and ovarian 18 cancer, okay, that's what I'm asking about.</p> <p>19 Are we on the same page?</p> <p>20 A. Yeah.</p> <p>21 Q. Wait. I just want you to know what I'm 22 asking about. Okay?</p> <p>23 A. Okay.</p> <p>24 Q. Now, you would agree with me, you 25 mentioned this morning there were confidentiality</p>	<p>1 on time and other considerations.</p> <p>2 Q. And, again, focusing my question very 3 specifically, the case-control studies on talc 4 and ovarian cancer, the cohort studies on talc 5 and ovarian cancer, the meta-analysis on talc and 6 ovarian cancer that you've reviewed in this case 7 and that you've cited in your expert report in 8 this case, none of those are bound by a 9 protective order that would prevent you from 10 reading them, analyzing or publishing on them; 11 correct?</p> <p>12 A. None of them are restrictive. 13 Everybody has access. I had, too.</p> <p>14 Q. Okay. You talked briefly about the 15 Centers for Disease Control this morning.</p> <p>16 A. Yes.</p> <p>17 Q. Have you ever worked with them?</p> <p>18 A. No. I've applied for grants with them, 19 and I wasn't funded, but I'm aware of them.</p> <p>20 Yeah.</p> <p>21 Q. Have you ever conducted a 22 population-based, case-control study yourself?</p> <p>23 A. Yes.</p> <p>24 Q. As principal investigator?</p> <p>25 A. Yes.</p>
<p style="text-align: center;">Page 307</p> <p>1 orders in place. But you'd admit that all of the 2 case-control epidemiology and all the cohort 3 epidemiology and all the meta-analysis that 4 you've reviewed are all out there in the 5 published literature; correct?</p> <p>6 A. The majority of them, studies are, 7 yeah. I mean, Taher is not out in the 8 literature. It's still in somewhere.</p> <p>9 Q. There's no -- there's no meta-analysis 10 cohort study or case-control study you're aware 11 of that is controlled or -- by some sort of 12 protective order that would limit you citing it 13 in some sort of review; correct?</p> <p>14 MS. PARFITT: Objection. Form.</p> <p>15 A. So, first of all, yeah. As you know, 16 Taher is sort of not published. So I don't know 17 how much of the data you can use.</p> <p>18 But in terms of protective, I don't know all 19 the rules about what you can use and not use. 20 So, I mean, it's just more my unfamiliarity with 21 the process, but nothing -- if you're asking the 22 question, is something preventing me from doing 23 that? No.</p> <p>24 Q. Okay.</p> <p>25 A. Can I go ahead and do it? It depends</p>	<p style="text-align: center;">Page 309</p> <p>1 Q. Have you done so for cohort studies?</p> <p>2 A. No. Not a cohort study.</p> <p>3 Q. Could we go to Langseth, whatever 4 exhibit number that is?</p> <p>5 MR. TISI: I've got it. It's 6 Exhibit 21. I've got a copy of it here.</p> <p>7 MS. PARFITT: Yeah. I know.</p> <p>8 MR. TISI: Do you mind me giving our 9 copy?</p> <p>10 MR. KLATT: No. Not at all.</p> <p>11 BY MR. KLATT:</p> <p>12 Q. I just have a few more questions. You 13 were already asked about Langseth, but I just 14 have a few more questions for you.</p> <p>15 At the time the Langseth study was 16 published, you would agree with me, Doctor --</p> <p>17 MS. PARFITT: I'm sorry, Mike. I 18 didn't hear your question. I'm sorry.</p> <p>19 Q. Yeah. Let me start over.</p> <p>20 MS. PARFITT: I appreciate that.</p> <p>21 Q. I'm talking about the Langseth paper 22 that we've marked as Exhibit 21; is that correct?</p> <p>23 It was published in 2008 by the IARC working 24 group members; correct?</p> <p>25 A. Yes. Some of the members. I suspect</p>

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<p>1 the group is much larger than these folks. 2 Q. Well, these happened to be 3 epidemiologists on the IARC working group; 4 correct? 5 A. I don't know all their qualifications. 6 Q. Do you know any of those people 7 personally who are listed as authors on 8 Exhibit 21? 9 A. No. 10 Q. I'll represent to you that they're 11 epidemiologists. You would agree with me, that 12 if you turn over to Page 2, they listed 14 13 population-based, case-control studies up at the 14 top, and then they had six more hospital-based, 15 case-control studies; correct? 16 A. Yes. 17 Q. At this time, there was one cohort 18 study all on the subject of talc and ovarian 19 cancer at the time; correct? 20 A. Yes. 21 Q. You would admit that the 22 population-based, case-control studies did not, 23 consistently across the board, show a 24 statistically significant increased risk 25 according to the table in Exhibit 21, the</p>	<p>1 it, in and of itself, was not statistically 2 significant; correct? 3 MS. PARFITT: Object to the form. 4 A. Yes. But it was consistent with the 5 overall estimates. 6 Q. And the cohort study didn't show an 7 increased risk. And the two cohort studies since 8 Langseth have not shown an increased risk of 9 ovarian cancer in talc users; correct? 10 MS. PARFITT: Objection. Misstates the 11 evidence. 12 A. I see that, A, two of the cohort 13 studies have showed an excess risk, which is not 14 statistically significant. One study has showed 15 statistically significant increased risk, and the 16 third studies have showed, you know, risk 17 estimates lower than one, but their upper bounds 18 are entirely consistent with what we see here and 19 subsequent to this. 20 Q. So the population-based, case-control 21 studies collectively show an increased risk. But 22 they're inconsistent; correct? 23 A. No. 24 MS. PARFITT: Objection. 25 A. I mean, let's go to Penninkilampi. I</p>
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<p>1 Langseth paper. Some were statistically 2 significant, and others were not; correct? 3 A. Yeah. But I mean, I don't view 4 statistical significance as -- 5 Q. Doctor -- 6 A. -- areas of consistency. 7 Q. Doctor, I just asked whether they were 8 statistically significant. 9 A. No. All of them were not statistically 10 significant. 11 Q. And we're talking about the 14 12 population-based, case-control studies in the 13 Langseth paper as of 2008; correct? 14 A. Yes. But I view them as consistent. 15 Q. And the hospital-based, case-control 16 studies that are on Page 2 of the Langseth paper, 17 the six -- the hospital-based, case-control 18 studies, none of them were statistically 19 significant; correct? 20 A. Yes. But I still view them as 21 consistent with the overall findings. 22 Q. And, in fact, when they did a 23 meta-analysis of the hospital-based, case-control 24 studies, that meta-analysis that added all 25 hospital-based, case-control studies together,</p>	<p>1 mean, they clearly opine that -- 2 Q. I'm asking you about Langseth. 3 A. Why are we looking at 2008 when we are 4 in 2019? 5 Q. Because I'm asking the questions. 6 A. Okay. 7 Q. You would agree with me that, of the 8 three study designs, cohort studies, 9 hospital-based, case-control studies and 10 population-based, case-control studies, only one 11 of those three study designs shows an overall 12 increased risk of ovarian cancer in talc users; 13 correct? 14 MS. PARFITT: Objection. Misstates the 15 evidence. 16 A. No. I mean, at least at that time, you 17 had one, you know, cohort study. I believe that 18 all of them show an excess risk, which is 19 consistent. Two of those study designs that 20 you're talking about, the hospital based and the 21 cohort, did not show a statistically significant, 22 which I still believe a significant excess that's 23 consistent. 24 Q. And you said earlier that you consider and use the Bradford Hill considerations;</p>

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<p>1 correct?</p> <p>2 A. Sorry. Just give me a second.</p> <p>3 Yeah. The Bradford Hill overviews as one.</p> <p>4 Q. And you know, Sir Bradford Hill himself</p> <p>5 said that, in evaluating consistency, you have to</p> <p>6 look at consistency across different study</p> <p>7 designs; correct?</p> <p>8 A. Yeah. And times and places and other</p> <p>9 things.</p> <p>10 Q. But I'm correct that Dr. Bradford or</p> <p>11 Sir Bradford Hill said that you have to look at</p> <p>12 consistency across different study designs;</p> <p>13 correct?</p> <p>14 A. That's what I state in my testimony, as</p> <p>15 well in my report cites that specific phrase,</p> <p>16 consistency across study designs, times and</p> <p>17 places. So I am not -- you know, I am, in fact,</p> <p>18 quoting him when I cite that.</p> <p>19 Q. You said, on Page 15 of your report,</p> <p>20 that, "Talc-based body powders are used</p> <p>21 habitually for months or years rather than just a</p> <p>22 single application"; correct?</p> <p>23 A. Where is that?</p> <p>24 MS. PARFITT: Page 15.</p> <p>25 Q. Page 15.</p>	<p>1 things you had reviewed was an Exhibit 47 to</p> <p>2 Imerys employee Julie Pier's deposition.</p> <p>3 Do you recall that?</p> <p>4 A. Yes. If you can show me that.</p> <p>5 MR. KLATT: Sure.</p> <p>6 THE WITNESS: Thank you.</p> <p>7 MR. KLATT: I'm sorry. I'm sorry.</p> <p>8 THE WITNESS: Exhibit --</p> <p>9 MR. KLATT: Yeah. Let's mark it as the</p> <p>10 next exhibit. And that would be 33; is that</p> <p>11 correct?</p> <p>12 MS. PARFITT: 32.</p> <p>13 COURT REPORTER: Here is 32 that you</p> <p>14 haven't used.</p> <p>15 MR. KLATT: Let me do this. Yes. That</p> <p>16 will be 32.</p> <p>17 (Chart marked Exhibit 32.)</p> <p>18 MR. TISI: The chart?</p> <p>19 MR. KLATT: Yes.</p> <p>20 BY MR. KLATT:</p> <p>21 Q. I'm going to show you what's been</p> <p>22 marked as Exhibit 32 to this deposition. But for</p> <p>23 future record references, it also has, in the</p> <p>24 upper right-hand corner, a photocopy, Exhibit</p> <p>25 No. 47; correct?</p>
<p>Page 315</p> <p>1 A. Where is that? I'm sorry. Which part</p> <p>2 of it? 15. I know I have 15. Is it the last</p> <p>3 paragraph or --</p> <p>4 MS. PARFITT: Yeah.</p> <p>5 A. I don't see -- okay. Yeah.</p> <p>6 Q. And what did counsel just point out to</p> <p>7 you?</p> <p>8 A. Yeah. I saw that. That's correct.</p> <p>9 Q. And can you read what you said there?</p> <p>10 A. "Talcum powder products are used</p> <p>11 habitually for months or years rather than a</p> <p>12 single application or single body."</p> <p>13 Q. Would you flip over to Page 54 of your</p> <p>14 report, please. In Paragraph 6 there, you say,</p> <p>15 in the third sentence that, "Recall bias is less</p> <p>16 likely to occur for chronic daily exposures such</p> <p>17 as talc"; correct?</p> <p>18 A. That's, you know, that's my</p> <p>19 understanding.</p> <p>20 Q. Talc, in your estimation, is a chronic</p> <p>21 daily exposure; correct?</p> <p>22 A. That's how -- that's my understanding</p> <p>23 that, you know, women are using it.</p> <p>24 Q. You, in response to Mr. Zellers'</p> <p>25 questions earlier today, said that one of the</p>	<p>Page 317</p> <p>1 A. Yeah.</p> <p>2 Q. Exhibit 47 was the exhibit number at</p> <p>3 Ms. Pier's deposition, and Exhibit 32 is the</p> <p>4 exhibit number we're marking this today; correct?</p> <p>5 A. Okay.</p> <p>6 Q. Would you agree with me that you don't</p> <p>7 have the expertise or knowledge to tell me that</p> <p>8 any of the samples on Exhibit 32 to today's</p> <p>9 deposition show asbestos in Imerys talc that</p> <p>10 ended up in Johnson & Johnson's baby powder, do</p> <p>11 you?</p> <p>12 MS. PARFITT: Objection.</p> <p>13 A. I mean, it says, you know,</p> <p>14 anthophyllite -- yeah. I mean, I don't have</p> <p>15 asbestos expertise here.</p> <p>16 Q. Let's -- you understand that most of</p> <p>17 these samples, the source of these samples isn't</p> <p>18 even identified?</p> <p>19 MS. PARFITT: Objection. Form.</p> <p>20 A. Yeah. But -- but, actually, can I</p> <p>21 answer that?</p> <p>22 So, for example, separate from the source, I</p> <p>23 mean, I understand that it says chrysotile</p> <p>24 asbestos for the first one. It says serpentine.</p> <p>25 It says chrysotile.</p>

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<p>1 Q. And where on that first one, and we're 2 looking at the very first line across the top of 3 Exhibit 32 --</p> <p>4 A. Sure.</p> <p>5 Q. -- where in the world does it say that 6 that was a sample of talc that ended up in 7 Johnson & Johnson's talc-based body powder 8 products?</p> <p>9 A. Well, my understanding, and I can share 10 that, that this was -- this was that -- that 11 testimony was given that this was a testing of 12 mines that was being mined by Imerys or -- I 13 mean, that contained asbestos.</p> <p>14 Whether it ended up in baby powder was not 15 the question. The question was: Does talc 16 contain asbestos?</p> <p>17 Q. Did plaintiffs' counsel ask you to make 18 that assumption?</p> <p>19 A. No. No.</p> <p>20 Q. Okay. Well, then, I'm confused, 21 because Imerys and its predecessors have tested 22 literally thousands of samples of talc from 23 competitors, from their own mines, from mines 24 that are never used for cosmetic purposes or baby 25 powder, so how can you tell me that the first</p>	<p>1 on your report where I think you refer to it. 2 A. I know it's in the biologic 3 plausibility section somewhere.</p> <p>4 Q. Look on page -- I believe it's Page 61 5 of your report.</p> <p>6 A. Yes.</p> <p>7 Q. No. I'm sorry. It's Page 59 of your 8 report. And it's the third paragraph down.</p> <p>9 A. Mm-hmm.</p> <p>10 Q. And you say, in the middle of the third 11 paragraph, "In studies of human mesothelial 12 cells, both nonfibrous talc and asbestos have 13 shown evidence of genotoxicity," and the 14 reference is 109, and my understanding is 15 reference 109 is the Shukla paper published in 16 2009; correct?</p> <p>17 A. Where are you referring? I'm sorry. 18 In Page 59?</p> <p>19 Q. Page 59 of your report, third 20 paragraph.</p> <p>21 A. Yeah.</p> <p>22 Q. Second sentence.</p> <p>23 A. Yeah. It says here, should be Shukla. 24 Yeah.</p> <p>25 Q. Did you read the Shukla paper?</p>
<p style="text-align: center;">Page 319</p> <p>1 sample on Exhibit 32 has anything to do with baby 2 powder?</p> <p>3 A. Well, I'm not telling you anything to 4 do with baby powder. My question is that, you 5 know -- that what constitutes talcum powder 6 products. And based on this and, you know, talc 7 is mined together with all these other particles, 8 I wanted to know, what are the results.</p> <p>9 And at least based on my understanding of 10 these results, again, I'm not a mineralogist, 11 they can argue whether the amount of asbestos is 12 significant or, you know, these fibers, chromium, 13 cobalt, nickel are significant. My understanding 14 is that these particles are present.</p> <p>15 Q. Can you tell me, based on your own 16 knowledge or expertise, that any sample listed on 17 Exhibit 32 was from talc that ended up in 18 Johnson & Johnson's baby powder or Shower to 19 Shower talcum powder products?</p> <p>20 A. No. I cannot.</p> <p>21 Q. Okay. You referred in your report to 22 the Shukla paper; correct?</p> <p>23 Do you recall that?</p> <p>24 A. Show it to me. It's been a while.</p> <p>25 Q. Sure. I'm going to give you the page</p>	<p style="text-align: center;">Page 321</p> <p>1 A. I read -- you know, I didn't read it 2 line by line. But, yes, I read it.</p> <p>3 Q. You know the Shukla paper has nothing 4 to do with genotoxicity; correct?</p> <p>5 A. I mean, we can look at it.</p> <p>6 Q. Sure. It's about gene expression; 7 correct?</p> <p>8 MS. PARFITT: Let's take a moment, 9 Mr. Klatt, see if he can look at the study here.</p> <p>10 Q. Do you have it handy, Doctor?</p> <p>11 A. No. I don't.</p> <p>12 MS. PARFITT: What is he referencing, 13 109?</p> <p>14 A. Shukla. I mean, it might be in my 15 files.</p> <p>16 Q. Well, I apologize. I thought I brought 17 an extra copy, but I don't think I have one with 18 me.</p> <p>19 (Discussion off the record.)</p> <p>20 Q. Well, just look at the title. The 21 title is "Alterations in Gene Expression in Human 22 Mesothelial Cells Correlates with Neural 23 Pathogenicity." Correct?</p> <p>24 A. Yes. I remember that title and abstract. Yes.</p>

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<p>1 Q. Gene expression is something that 2 occurs in our bodies every day; correct? 3 Trillions of times every day; correct? 4 A. Yeah. Yeah. 5 Q. And changes in gene expression, in and 6 of themselves, don't establish genotoxicity; 7 correct? 8 A. Yeah. And I'm not -- again, this, you 9 know, in the section on biologic plausibility, 10 I'm not making this argument that talc is an 11 established mutagen and, you know, whether it's a 12 genotoxic or nongenotoxic carcinogen. I'm just 13 citing the studies. 14 So, I mean, again, I don't have that 15 expertise, and, you know, does it provide 16 evidence for or against biological plausibility 17 mechanisms. 18 Q. Okay. But you don't have the expertise 19 to judge that; correct? 20 MS. PARFITT: Objection. 21 A. No. I have expertise to judge whether 22 these studies suggest evidence of, you know, 23 changes and we should probably just look at it -- 24 give me a second. 25 Q. Sure.</p>	<p>1 common in these lawsuits, wasn't associated with 2 pelvic inflammatory disease; correct? 3 A. Again, I don't remember the papers. 4 Sorry. 5 Q. All right. Well, it's on Page 58 of 6 your report and it's reference 122. 7 A. Which page of my report? 8 Q. Page 58 of your report that cites 9 reference 122. 10 MS. PARFITT: Here's the article. 11 Q. Do you see the reference? 12 A. Yeah. Yeah. 13 Q. Do you see the reference in your 14 report? 15 A. Sure. 16 Q. And reference 122 is to the Rasmussen 17 paper from 2017 on pelvic inflammatory disease 18 and ovarian cancer; correct? 19 A. Yeah. And my citation is correct. I 20 mean, about borderline ovarian. I don't misquote 21 the study. 22 Q. I didn't say you misquoted it, but the 23 study does stand for the proposition that the 24 most common form of ovarian cancer, both in the 25 U.S. and in these lawsuits, high-grade serous</p>
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<p>1 MS. PARFITT: Give me a second. 2 Q. My specific question is you cited 3 Shukla for evidence of genotoxicity, but it says 4 nothing whatsoever about genotoxicity, does it? 5 A. We have to look at the paper before we 6 say that. 7 It's 109. Yeah. Let me look in my binder. 8 I think I have all the studies. 9 Q. Doctor, I'll represent to you, in the 10 interest of time, I've searched the Shukla paper, 11 and the word "genotoxicity" or "mutagenicity" is 12 never mentioned in the paper. 13 A. I -- I don't want to deny that. It may 14 be. I just feel that I wouldn't have used that 15 term had I not seen it there. 16 Q. In the interest of time, rather than 17 wasting time, let's move on. 18 You'd agree with me that pelvic inflammatory 19 disease is chronic inflammation of the ovaries, 20 fallopian tubes and peritoneum; correct? 21 A. Yes. 22 Q. And, yet, you cited the Rasmussen 23 paper, and the Rasmussen paper says that 24 high-grade serous ovarian cancer, which is the 25 most common form of ovarian cancer and the most</p>	<p>1 ovarian cancer is not associated with pelvic 2 inflammatory disease; correct? 3 A. Where does it show that? I didn't -- 4 Q. Can you go to the "Discussion" section. 5 A. Again, you know, my view of 6 inflammation was, you know, I was looking for 7 evidence for or against. And, you know, I wasn't 8 disaggregating by ovarian cancer subtype, but I'm 9 happy to look at it. 10 MS. PARFITT: Mark, do you have a page 11 in the article? 12 MR. KLATT: I don't know if we have the 13 same pagination, but my page is -- 14 MS. PARFITT: Here. I got it. It's 29 15 of 33. 16 MR. KLATT: I believe that's right. 17 MS. PARFITT: Okay. 18 MR. KLATT: It's the "Discussion" 19 section. 20 MS. PARFITT: Yes. 21 BY MR. KLATT: 22 Q. And if you look at the "Discussion" 23 section, Doctor -- 24 A. Yes. 25 Q. -- it starts -- the very first</p>

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<p>1 paragraph starts with "to our knowledge"; 2 correct? 3 A. Yeah. 4 Q. Okay. Go down one, two, three, to the 5 fourth paragraph starting with "in the present 6 study"? 7 A. Sure. 8 Q. And in that paragraph, tell me if I 9 correctly quote this sentence. 10 "Conversely, no convincing associations 11 between PID," which is pelvic inflammatory 12 disease, "and the risk of high-grade serous, 13 mucinous, clear cell or endometrioid ovarian 14 cancer were noted in the main analysis." 15 Did I read that correctly? 16 A. Yes. 17 Q. And then if you go down to the very 18 next paragraph that begins with "nevertheless." 19 A. Yeah. I see that, but I -- 20 Q. Wait. Wait. 21 A. No. No. I need to answer your 22 question. 23 Q. I'm just asking you, first of all, if 24 I'm reading this correctly. 25 A. Sure.</p>	<p>1 Q. So the paper you cited, the 2017 2 Rasmussen paper on pelvic inflammatory disease 3 and ovarian cancer is inconsistent with the 4 theory that chronic inflammation causes 5 high-grade serous ovarian cancer; correct? 6 A. Let's go to Paragraph 3. 7 Q. Could you just answer my question? 8 A. Yeah. I'm trying to. 9 MS. PARFITT: Objection. 10 A. No. It isn't inconsistent. 11 Because if you look at Paragraph 3, they 12 state, "Furthermore, we observed similarly 13 increased risks of serous and mucinous borderline 14 tumors associated with PID status. Furthermore," 15 and they also state, "Sensitivity analysis 16 revealed statistically significant increased risk 17 of low-grade serous and endometrial when using 18 data from the North American..." 19 So I don't think your -- and concerning the 20 histologic subtypes, indications of risk of 21 low-grade serous cancers were noted in the main 22 analysis. I wasn't disaggregating. But this 23 entirely consistent with what I quote here, that 24 you increase serous type and you increase 25 low-grade type and you increase histologic.</p>
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<p>1 Q. In the next paragraph that begins with 2 "nevertheless," do you see what I'm talking 3 about? 4 A. Yeah. 5 Q. There's a sentence that says, 6 midparagraph, "In contrast, no associations 7 between pelvic inflammatory disease and 8 high-grade serous ovarian cancer were observed"; 9 correct? 10 Did I read that correctly? 11 A. Our results suggest -- I'm sorry. 12 Where -- 13 Q. In contrast. Do you see the sentence 14 that says "in contrast"? 15 A. Where was it? Is it in the same 16 paragraph? 17 Q. It's the paragraph starting with 18 "nevertheless, our results." 19 A. Yeah. But it says differentially. 20 Where does it say in contrast? In contrast. 21 Yeah. 22 Q. Okay. Can you read that sentence? 23 A. "In contrast, no associations between 24 PID and high-grade serous ovarian cancers were 25 observed."</p>	<p>1 You are trying to disaggregate this into a 2 high-grade serous. I don't know what's in the 3 lawsuit. I'm really not opining on -- 4 Q. I'm not trying to disaggregate 5 anything, Doctor. I'm saying Rasmussen, the 6 study that you -- 7 A. Yeah. 8 Q. The study that you chose to cite -- 9 A. Sure. 10 Q. -- in your article indicates there's no 11 association between pelvic inflammatory disease 12 that is a chronic disease of the female 13 reproductive tract and high-grade serous ovarian 14 cancer; correct? 15 A. And the same -- 16 MS. PARFITT: Objection is. 17 A. -- study showed an increase risk of -- 18 Q. Is that correct? 19 MS. PARFITT: Let him finish, please. 20 A. -- between PID and serous ovarian 21 cancer. So it sort of is -- is consistent with 22 my hypothesis of inflammation and ovarian cancer. 23 I was not disaggregating histologic 24 subtypes. 25 Q. My question is not about low-grade</p>

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<p>1 serous that doesn't occur very often. My 2 question is about high-grade serous ovarian 3 cancer in the evidence from the Rasmussen paper, 4 and they say clearly twice, that pelvic 5 inflammatory disease is not associated with 6 high-grade serous ovarian cancer; is that 7 correct?</p> <p>8 A. That's what they state in the study. 9 But they also state clearly that serous ovarian 10 cancer is associated with PID status. So that's 11 also clearly stated.</p> <p>12 Q. And if, indeed, as they state, there is 13 no association between high-grade serous ovarian 14 cancer and pelvic inflammatory disease, that's 15 inconsistent with the theory that inflammation 16 causes high-grade serous ovarian cancer; correct?</p> <p>17 MS. PARFITT: Objection. Form.</p> <p>18 A. So, again, you know, first of all, you 19 know, I -- other people will opine to the 20 biologic sort of arguments about inflammation and 21 ovarian cancer. And I did not disaggregate 22 specific, and I don't think this study is 23 inconsistent with what I state here. And I note 24 that borderline ovarian cancer.</p> <p>25 So this is entirely consistent with the</p>	<p>1 cancer. So if we disaggregate it, then we have 2 to disaggregate the way they have defined it. 3 Q. And when we disaggregate, you come to 4 the conclusion that inflammation is associated 5 with borderline ovarian cancer. But, in 6 fairness, you have to come to the conclusion that 7 inflammation is not associated with high-grade 8 serous ovarian cancer?</p> <p>9 MS. PARFITT: Objection.</p> <p>10 Q. If you're being objective; correct?</p> <p>11 MS. PARFITT: Objection. Misstates 12 testimony.</p> <p>13 A. I am being objective. I am providing 14 that they conclude, not I conclude, that, you 15 know, inflammation is PID, you know, it's just 16 one aspect of inflammation. PID is associated 17 with serous ovarian cancer. And, yes, it is not 18 associated with high-grade epithelial ovarian 19 cancer.</p> <p>20 Q. You talked with Mr. Zellers earlier 21 today about recall bias, correct, and how it can 22 operate in case-control studies?</p> <p>23 A. I don't recall the details.</p> <p>24 Q. But you recall the subject was 25 discussed --</p>
<p style="text-align: center;">Page 331</p> <p>1 inflammation hypothesis. And I just, you know -- 2 Q. In your report, you cited what you 3 thought was consistent with the inflammation 4 theory, but you didn't cite the evidence from 5 Rasmussen that was inconsistent with the 6 inflammation theory; correct?</p> <p>7 MS. PARFITT: Objection.</p> <p>8 A. No. I was not disaggregating to the 9 level of each histologic subtype.</p> <p>10 Q. Well, didn't -- in your report, on 11 Page 58 --</p> <p>12 A. Yeah.</p> <p>13 Q. -- didn't you make the specific point 14 that Rasmussen said inflammation was associated 15 with low-grade cancer?</p> <p>16 A. No. It just said increased risk of 17 borderline ovarian cancer.</p> <p>18 Q. Okay. Borderline. That's a specific 19 type of ovarian cancer.</p> <p>20 A. Sure.</p> <p>21 Q. So you did disaggregate in your report, 22 didn't you?</p> <p>23 A. Sure. Yeah, but I mean, if you look at 24 the study, and we want to disaggregate it, the 25 study still shows a risk of serous ovarian</p>	<p style="text-align: center;">Page 333</p> <p>1 A. Yes. 2 Q. -- correct? 3 A. Yes. And I'm going to take a break in 4 a minute.</p> <p>5 Q. Sure. Do you know if, in any of these 6 case-control studies -- well, let me back up. 7 A case-control study takes a group of cases 8 which are women with -- who already have ovarian 9 cancer, and interviews them; correct?</p> <p>10 A. Yes. 11 Q. And then it takes a group of controls 12 and, in the context of a population-based 13 case-control study, those controls are healthy 14 women out in the community; correct?</p> <p>15 A. Yeah. In the context of -- yes. 16 Q. Do you know if any of these 17 case-control studies, when they were interviewing 18 the case women who had ovarian cancer, asked them 19 when they entered the study, "Do you have any 20 preconceived notions about what might have caused 21 your ovarian cancer?"</p> <p>22 A. I didn't review that specific question. 23 Q. Wouldn't that be an important question 24 to ask? Because if a woman already has a 25 preconceived notion from research or word of</p>

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<p>1 mouth what might cause her ovarian cancer, that 2 may bias the results; correct?</p> <p>3 MS. PARFITT: Objection.</p> <p>4 A. There's lots of different questions you 5 could ask them. You know, I would have, if I had 6 designed a study, I would have asked many other 7 questions.</p> <p>8 Q. And would you have asked that one, "Do 9 you have preconceived notions as to what might 10 have caused your ovarian cancer," before you 11 entered the study?</p> <p>12 A. I don't -- you know, I don't -- I 13 haven't thought about that conceptual or new 14 study. I'm not sure that is that important 15 question to ask.</p> <p>16 Q. It wouldn't be an important question to 17 ask women entering a study, a case-control 18 study --</p> <p>19 A. Sure.</p> <p>20 Q. -- women who have ovarian cancer, "Do 21 you have a preconceived notion about what caused 22 your ovarian cancer?"</p> <p>23 A. You know, I've done -- designed 24 case-control studies of etiology cases and 25 outcomes. I've never asked the participants</p>	<p>1 eliminate for the possibility of recall bias. 2 Others may design it differently.</p> <p>3 THE WITNESS: I'm going to take a 4 break.</p> <p>5 MR. KLATT: Sure.</p> <p>6 THE VIDEOGRAPHER: Off the record, 7 4:30 p.m.</p> <p>8 (A recess was taken.)</p> <p>9 THE VIDEOGRAPHER: Back on the record. 10 4:36 p.m.</p> <p>11 BY MR. KLATT:</p> <p>12 Q. Doctor, are you board certified in 13 epidemiology?</p> <p>14 A. No.</p> <p>15 Q. Are you a member of the American 16 College of Epidemiology?</p> <p>17 A. No.</p> <p>18 Q. Are you a member of the Society for 19 Epidemiologic Research?</p> <p>20 A. No.</p> <p>21 MR. KLATT: All right. I'm going to 22 turn it over to Mr. Locke. Thank you for your 23 time.</p> <p>24 THE WITNESS: Thank you.</p> <p>25 THE VIDEOGRAPHER: Off the record,</p>
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<p>1 about what is your preconceived notions about 2 certain outcomes.</p> <p>3 I mean, I'm just trying to understand, why 4 would you ask that, because --</p> <p>5 Q. Because you're trying to eliminate bias 6 from the study; correct?</p> <p>7 A. Yeah.</p> <p>8 Q. And if you enter the study with a 9 preconceived notion what caused your ovarian 10 cancer, you already have a bias; correct?</p> <p>11 MS. PARFITT: Objection.</p> <p>12 A. But I mean, aren't you introducing bias 13 by asking these questions? "Okay, what is your 14 preconceived notion?" I'm trying to understand 15 this question. I just don't think that --</p> <p>16 Q. So it's your testimony that, typically, 17 in these case-control studies, the women who have 18 the disease of interest, in this case, ovarian 19 cancer, are not asked, when they enter the study, 20 if they already have preconceived notions about 21 what caused their ovarian cancer?</p> <p>22 A. Yeah. In my opinion, if I were to 23 design a next case and control study, I'm not 24 sure that would be a question. I would have to 25 think about why I would ask that question to</p>	<p>1 4:36 p.m. 2 (A recess was taken.)</p> <p>3 THE VIDEOGRAPHER: Back on the record, 4 4:38 p.m.</p> <p>5 CROSS-EXAMINATION</p> <p>6 BY MR. LOCKE:</p> <p>7 Q. Doctor, my name is Tom Locke. I 8 represent the Personal Care Products Council.</p> <p>9 Prior to this litigation, had you ever heard 10 of the Personal Care Products Council?</p> <p>11 A. No.</p> <p>12 Q. Sometimes it goes by the name of PCPC. 13 Have you ever heard of that?</p> <p>14 A. No.</p> <p>15 Q. Previously, the Personal Care Products 16 Council was known as the Cosmetics, Toiletries 17 and Fragrances Association.</p> <p>18 Prior to this litigation, had you heard of 19 that entity?</p> <p>20 A. No.</p> <p>21 Q. And sometimes that's abbreviated, CTFA. 22 Had you heard of that entity?</p> <p>23 A. No.</p> <p>24 Q. Have you, prior to this talc 25 multi-district litigation that we're here on</p>

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<p>1 today, have you worked with any of the 2 plaintiffs' lawyers with whom you've had dealings 3 in talc?</p> <p>4 A. Yeah. I mentioned that I worked with 5 Attorney Restaino in the atorvastatin that is 6 listed on my testimony.</p> <p>7 Q. Anyone else?</p> <p>8 A. No.</p> <p>9 Q. Have you worked with the Beasley Allen 10 firm?</p> <p>11 A. They're not -- I don't know if they're 12 part of this talc. The name sounds familiar. I 13 just don't know the name of the lawyers.</p> <p>14 Q. Right. They're part of the lead 15 plaintiffs' counsel in this multi-district 16 litigation.</p> <p>17 A. But I just have had correspondence with 18 these lawyers. So, you know, I may have had -- 19 received, I don't know, documents or -- I don't 20 know if invoices or something that may have. But 21 I don't -- I haven't, like, corresponded with the 22 lawyers of Beasley Allen.</p> <p>23 Q. What I'm asking about is whether you 24 had worked with the Beasley Allen firm prior to 25 this talc litigation.</p>	<p>1 A. I remember asking about this specific 2 trial. I have not asked for other trial 3 testimony, I don't think.</p> <p>4 Q. When you say "this specific trial," 5 what do you mean?</p> <p>6 A. When I said -- you know, I said, in 7 this litigation, have epidemiology testimony been 8 submitted. And I have asked for it. Yeah.</p> <p>9 Q. Would it be relevant to you that other 10 scientists have analyzed the very same issues 11 that are encompassed in your report and testified 12 on behalf of defendants in other talc litigation?</p> <p>13 A. Yeah. And as you see that, I have not 14 even had a chance to review the expert report 15 of -- on behalf of the plaintiffs that were 16 submitted in the list.</p> <p>17 So, yes, it will be nice to do that. A, how 18 much time; and, B, you know, I think it would 19 probably be more prudent to wait for the 20 epidemiologists on this particular case.</p> <p>21 But, you know, as you said, I haven't even 22 had the chance to review the plaintiffs' experts. 23 And, you know, I asked for defendants' expert, 24 you know, report.</p> <p>25 Q. You asked for defendants' expert</p>
<p style="text-align: center;">Page 339</p> <p>1 A. I have listed the -- you know, 2 listed the cases I worked for. I don't remember 3 the name of the counsels and, you know, who were 4 on the firms. So if it ended up that they were 5 involved in Viagra or something else, that's just 6 a recollection issue.</p> <p>7 Q. Okay. Mr. Klatt asked you about 8 materials authored by defense experts. Let me 9 elaborate on that a little bit.</p> <p>10 Are you aware that various defense experts 11 authored reports in connection with prior talc 12 litigation?</p> <p>13 A. No. I'm not aware.</p> <p>14 Q. Are you aware that there were prior 15 talc trials?</p> <p>16 A. I mean, I have seen it in the news 17 that -- I don't know if they're in state court, 18 federal court, you know. I see it in the news.</p> <p>19 Q. Did you --</p> <p>20 A. California or something. Yeah. I'm 21 not aware.</p> <p>22 Q. Did you ask for the testimony of any 23 defense experts who may have testified regarding 24 epidemiology in connection with that other talc 25 litigation trials?</p>	<p style="text-align: center;">Page 341</p> <p>1 reports in this litigation.</p> <p>2 A. Sure.</p> <p>3 Q. But you didn't ask for defendants' 4 expert reports, deposition transcripts or trial 5 testimony in the prior talc litigation?</p> <p>6 A. How do I know? I mean, I'm not very 7 familiar with how these, you know, different 8 trials are occurring, what you can share, which 9 attorneys are involved in which trials.</p> <p>10 I'm sorry. I didn't ask for it. I know 11 that, but I'm just not familiar with that 12 process, what they can share.</p> <p>13 Q. Okay. Can you go to Page 10 of your 14 report. And I guess there are two exhibits to 15 it, or it's referred to in two exhibits.</p> <p>16 Are you looking at Exhibit 10 there?</p> <p>17 A. Exhibit 10.</p> <p>18 Q. On the front page.</p> <p>19 MS. PARFITT: It's your report. Yes.</p> <p>20 A. Exhibit 10. Yes.</p> <p>21 Q. So if you could go to Page 10, I'd 22 appreciate that. And on Page 10, you're 23 discussing, among other things, the advantages 24 and disadvantages of cohort and case-control 25 studies; is that correct?</p>

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<p>1 A. Yes.</p> <p>2 Q. Okay. If you would look at the</p> <p>3 paragraph that begins with the phrase</p> <p>4 "case-control studies."</p> <p>5 Do you see that there?</p> <p>6 A. Yeah.</p> <p>7 Q. Okay. You're explaining your opinion</p> <p>8 why case-control studies have some advantages</p> <p>9 over cohort studies in that paragraph; is that</p> <p>10 correct?</p> <p>11 A. No. Not necessarily. I mean, that</p> <p>12 just talks about the strength and weaknesses of</p> <p>13 various studies designs. I mean, in fact, you</p> <p>14 know, it talks about whether, you know, that, in</p> <p>15 fact, it says exposure is ascertained</p> <p>16 retrospectively.</p> <p>17 So I'm just talking about the strength and</p> <p>18 limitations of various designs.</p> <p>19 Q. Okay. I was using advantages and</p> <p>20 disadvantages.</p> <p>21 Is there a significant difference between</p> <p>22 those two?</p> <p>23 A. That's just the term we use. Yeah.</p> <p>24 Q. Okay. Now, one of the strengths, in</p> <p>25 your opinion, of a case-control study, is that it</p>	<p>1 be useful, because you couldn't find all of the</p> <p>2 lung cancer cases.</p> <p>3 A. Yes. And that sort of applies to</p> <p>4 Gonzalez. And it was a six-month study, and some</p> <p>5 of the other cohort studies that were of limited</p> <p>6 duration.</p> <p>7 So, yes, I mean, I don't know about the time</p> <p>8 course exactly of lung cancer risk, but can apply</p> <p>9 to various outcomes.</p> <p>10 Q. Okay. So what is the latency period</p> <p>11 for perineal talc exposure and ovarian cancer?</p> <p>12 A. I do not have -- I don't know, because,</p> <p>13 you know, I don't -- again, I don't elucidate the</p> <p>14 mechanism of ovarian cancer and the precise link.</p> <p>15 So I cannot tell you that X number of days after</p> <p>16 perineal talc or months after. I know that it is</p> <p>17 long-term. It could be months to years. And</p> <p>18 that's as much as I can say.</p> <p>19 Q. So your example, when you were talking</p> <p>20 about 12 months, actually, that really wouldn't</p> <p>21 be a problem or we don't know whether that's a</p> <p>22 problem or not because it could be months?</p> <p>23 A. No.</p> <p>24 MS. PARFITT: Objection.</p> <p>25 THE WITNESS: Sorry.</p>
<p style="text-align: center;">Page 343</p> <p>1 captures the entire time period when an ovarian</p> <p>2 cancer illness could occur; is that correct?</p> <p>3 A. That's not necessarily like an entire</p> <p>4 time. First of all, we don't know the precise</p> <p>5 number of years.</p> <p>6 But, yes, we know that it is a long-term</p> <p>7 exposure. So case-control studies allow us to</p> <p>8 ascertain long-term exposure. So that's a much</p> <p>9 more accurate reflection.</p> <p>10 Q. And you were saying one of the</p> <p>11 weaknesses of a cohort study is that it might not</p> <p>12 capture all of the ovarian cancer cases because</p> <p>13 ovarian cancer can develop over a long period of</p> <p>14 time; is that correct?</p> <p>15 A. Yes. After a particular agent, if it's</p> <p>16 related, you know.</p> <p>17 Q. Okay. And you mentioned, in fact,</p> <p>18 there's a sentence here, "It is important to</p> <p>19 determine the latency and induction between the</p> <p>20 exposure and the disease to assess the duration</p> <p>21 of follow-up"; is that correct?</p> <p>22 A. It is.</p> <p>23 Q. Okay. And then you give the example of</p> <p>24 smoking. And you talked about, if you looked at</p> <p>25 it for a 12-month follow-up study, that would not</p>	<p style="text-align: center;">Page 345</p> <p>1 A. So, yeah, months would be a problem.</p> <p>2 It's mostly -- I mean, yes, we have some bounds,</p> <p>3 but most of the studies we see, it is likely to</p> <p>4 have been, you know, several years after</p> <p>5 exposure.</p> <p>6 Q. And how do you know that? Which</p> <p>7 studies have you reviewed or analyzed that say</p> <p>8 that it's several years after exposure?</p> <p>9 A. Well, all of -- you know, the</p> <p>10 case-control studies that have provided data on</p> <p>11 duration of exposure and show evidence of</p> <p>12 duration responsiveness suggest that -- so, for</p> <p>13 example, Penninkilampi and others suggest that</p> <p>14 this is -- you know, while there are increased</p> <p>15 risks before both more than 20 years or more than</p> <p>16 3,600 applications as well as those are less, the</p> <p>17 risk is higher among those with higher duration.</p> <p>18 But, again, I cannot partition this at 20 or</p> <p>19 15.</p> <p>20 Q. Okay. You have a phrase in here that</p> <p>21 says "because ovarian cancer develops over many</p> <p>22 years."</p> <p>23 Is that an accurate assessment of your</p> <p>24 views?</p> <p>25 A. Where is that?</p>

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<p>1 Q. If you look at the next paragraph, 2 first sentence, last clause. 3 A. Yeah. 4 Q. Other plaintiffs' experts have stated 5 in their reports that the latency period could be 6 decades. 7 Would you disagree with that? 8 A. Yeah. I mean, when I say many years, 9 it could be -- yeah, I just -- 10 Q. You don't know? 11 A. I don't know the precise. I don't want 12 to quantify the number of years. 13 Q. Okay. I want to shift topics a little 14 bit here. You reference Linda Loretz's 15 deposition transcript in -- I think once in your 16 report. 17 If you would go to Page 7, I believe it is. 18 It's in a footnote. Footnote 1. 19 A. Mm-hmm. 20 Q. Now, did you read the entirety of 21 Dr. Loretz's deposition transcript? 22 A. Again, these are so many documents. I 23 mean, I reviewed, you know, not -- but I don't 24 know if I read the whole transcript. Yeah. 25 Q. Do you know how many days she was</p>	<p>1 not even a citation. I mean, it's -- I feel 2 that, and we were discussing that, you know, 3 could a randomized trial be here conducted. And 4 to my mind, it would be unethical. So... 5 Q. Well, yeah. But then you say, 6 "Defendants here have admitted this fact." 7 And so I'm just wondering what brought you 8 to that particular part midway in her deposition, 9 the second day of her deposition of a three-day 10 deposition. 11 A. Some of this has, you know -- it just 12 doesn't -- I don't know why I would, you know, 13 put it -- but it's sort of -- it's even 14 irrelevant if you take her out of it. Because, 15 you know, it's like, are we really going to do a 16 randomized trial? 17 Q. I agree with you. It's irrelevant. 18 A. Yeah. 19 Q. If you could go to Page 62 of your 20 report. You've got a caption there "Cosmetic 21 Expert Review Panel Report." 22 Do you see that? 23 A. Yes. 24 Q. Roman numeral XII? 25 A. Yes.</p>
<p>1 deposited? 2 A. I don't recall. 3 Q. More than one day? 4 A. I don't know that. I'm sorry. 5 Q. So her deposition transcript, I'll 6 represent to you, is 1,133 pages in length. 7 Did you read all that? 8 A. No. I didn't agree that I read all of 9 them either. Yeah. 10 Q. Okay. I was a little confused because 11 I thought you had said, for hers, that you had 12 read the whole thing. 13 A. No. I didn't say I had read -- you 14 know, I have read the transcript, but it doesn't 15 mean that I read every, you know, precise word 16 and precise -- 17 Q. Do you know what her background is? 18 A. No, I don't. 19 Q. Do you know if she's a scientist? 20 A. I don't remember, you know, the 21 specifics of the transcript. 22 Q. How is it that you picked out this 23 quote then on -- that's Footnote 1 or this 24 citation, Footnote 1, Page 7? 25 A. Yeah. I mean, it's not even -- that's</p>	<p>1 Q. Do you know what the name of the 2 organization is that you're referring to in that 3 paragraph? 4 A. I don't know the name. 5 Q. Do you know if Dr. Loretz testified 6 regarding that review? 7 A. If I have cited her, then I have. 8 Q. Well, you didn't cite her on this 9 portion. That's why I'm asking about it. 10 A. I don't know. I mean, you're asking 11 all these different names. They're all -- if I 12 haven't cited her, then I haven't reviewed it. 13 Q. Okay. Have you heard of the Cosmetic 14 Ingredient Review? 15 A. Yes. 16 Q. Sometimes referred to as CIR? 17 A. Yes. 18 Q. Dr. Loretz, in her deposition, 19 references the CIR dozens of times, doesn't she? 20 A. Again, as I said, I didn't review the 21 entirety of the thousand pages. 22 Q. Okay. I'm just trying to understand 23 what you did review and you didn't. You wrote a 24 paragraph about the CIR. And I'm trying to 25 understand why you didn't reference Dr. Loretz</p>

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<p>1 when she testified about that.</p> <p>2 A. So, as you can see, it's reference to</p> <p>3 the published report, and, you know, I</p> <p>4 reviewed -- again, even that was lengthy</p> <p>5 document, and, you know, I wanted to review that</p> <p>6 for completeness and understand that.</p> <p>7 Q. Did you read the entirety of that</p> <p>8 report?</p> <p>9 A. As much as I can. Not every word in</p> <p>10 every sentence.</p> <p>11 Q. Okay. Do you know if the FDA plays a</p> <p>12 role in the CIR's review that you're referring to</p> <p>13 on Page 62 of your report?</p> <p>14 A. I'm not aware of the specific</p> <p>15 composition, but I know that FDA is -- attends or</p> <p>16 is a member or has some sort of role there.</p> <p>17 Q. Do you know who the Consumer Federation</p> <p>18 of America is?</p> <p>19 A. No.</p> <p>20 Q. Do you know if they play any role in</p> <p>21 the CIR report?</p> <p>22 A. I don't know. And maybe it's in the</p> <p>23 study and I can't tell you offhand who is in this</p> <p>24 panel.</p> <p>25 Q. It's also in Dr. Loretz's deposition.</p>	<p>1 A. Yes.</p> <p>2 MS. PARFITT: Objection.</p> <p>3 A. But specific to talc, you would want</p> <p>4 more diverse representation with gynecologists,</p> <p>5 oncologists, epidemiologists.</p> <p>6 So it's not that it was a criticism of the</p> <p>7 CIR review panel or whoever was on that as a</p> <p>8 dermatologist, but specific to it, did they have</p> <p>9 the expertise to -- and maybe they did, but I'm</p> <p>10 just pointing that out.</p> <p>11 Q. So you don't know, one way or another,</p> <p>12 whether they had the expertise?</p> <p>13 A. Yeah. I mean, from my understanding,</p> <p>14 they didn't have expertise in carcinogenicity and</p> <p>15 epidemiology.</p> <p>16 Q. What do you base that on?</p> <p>17 A. Yeah. I mean, you know, some of the</p> <p>18 names that are here, they were dermatologists.</p> <p>19 That's sort of my understanding.</p> <p>20 Q. Did you look them up and investigate</p> <p>21 what they do or what they have done in their</p> <p>22 careers?</p> <p>23 A. No. I have not.</p> <p>24 Q. Okay. So you're criticizing them as</p> <p>25 not having the capability of doing the review,</p>
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<p>1 That's the reason I'm exploring it.</p> <p>2 Do you know that one of the missions of the</p> <p>3 Consumer Federation of America is to represent</p> <p>4 consumers in connection with Cosmetic Ingredient</p> <p>5 Reviews?</p> <p>6 A. I'm not aware of that.</p> <p>7 Q. Okay. Do you know who was on the panel</p> <p>8 of the CIR review?</p> <p>9 A. No.</p> <p>10 Q. Do you know whether there were</p> <p>11 toxicologists who were part of the panel?</p> <p>12 A. I don't know that.</p> <p>13 Q. You criticize the panel makeup because</p> <p>14 it was "primarily composed of dermatologists."</p> <p>15 A. Sure.</p> <p>16 Q. Do you see that?</p> <p>17 A. Yes.</p> <p>18 Q. Do you know why dermatologists would be</p> <p>19 relevant to a review of cosmetics?</p> <p>20 A. Yes. I mean, yeah. But, of course,</p> <p>21 the majority of cosmetics are on -- you know,</p> <p>22 applied on the skin. Yeah. It would be</p> <p>23 relevant.</p> <p>24 Q. So they would be relevant to a CIR</p> <p>25 review?</p>	<p>1 but you don't really know their expertise?</p> <p>2 MS. PARFITT: Objection. Misstates his</p> <p>3 testimony.</p> <p>4 A. Yeah. It doesn't say -- first of all,</p> <p>5 it's not a criticism. It just says, what is the</p> <p>6 composition of the panel. It says it was</p> <p>7 composed of, you know, expertise in epidemiology</p> <p>8 and carcinogen -- so it's just sometimes</p> <p>9 panels -- and it may have been very appropriate</p> <p>10 for the 100 and whatever products that were</p> <p>11 evaluated by that panel.</p> <p>12 Q. Okay. One of the things that you</p> <p>13 say --</p> <p>14 A. Sure.</p> <p>15 Q. -- is that there was a -- the review</p> <p>16 was limited or limited its assessment to animal</p> <p>17 and clinical studies on talc that did not contain</p> <p>18 asbestos.</p> <p>19 Do you see that?</p> <p>20 A. Yeah.</p> <p>21 Q. You would agree that the CIR reviewed</p> <p>22 all of the epidemiological studies that were</p> <p>23 available at that time; correct?</p> <p>24 MS. PARFITT: Objection. Misstates</p> <p>25 testimony.</p>

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<p>1 A. I don't know -- you know, I know that 2 they reviewed the process and they looked at 3 studies, and I don't know if it was all 4 epidemiologic studies, but I think and I 5 understand that presumption was that talc does 6 not contain asbestos. I mean, that's what -- the 7 premise they started out with.</p> <p>8 Q. Well, did the epidemiologic studies 9 make a distinction between talc and its 10 constituents or alleged constituents?</p> <p>11 A. Yeah. I mean, there are -- as I cite 12 in my report, there are -- they don't make 13 distinctions, but they -- some of the studies -- 14 you know, some of the testimony we've discussed, 15 some of the, you know, testing we've discussed, 16 and some, you know, small publications suggest 17 that talc may contain asbestos. So you have 18 these evidence.</p> <p>19 But the CIR review was already carried out 20 with the presumption that talc did not contain 21 asbestos.</p> <p>22 Q. But they reviewed all of those studies 23 that you referenced, or do you not know what they 24 reviewed?</p> <p>25 MS. PARFITT: Objection.</p>	<p>1 they asked -- this statement is about the 2 question they asked. They asked the question, 3 that talc fiber not containing asbestos, does it 4 cause.</p> <p>5 So if they ask the question already, we know 6 that, they presume there was no presence of. So 7 it's about the question that I'm stating it.</p> <p>8 Q. But the epidemiologic studies, when 9 they're analyzing talc use among women, they're 10 not making a distinction between talc that 11 contains or doesn't contain constituents. 12 They're talking about women who use products; 13 correct?</p> <p>14 A. That is correct.</p> <p>15 Q. So if your theory is correct and talc 16 contains harmful substances in addition to talc, 17 then the epidemiologic studies would have 18 reviewed women's exposure to those constituents; 19 correct?</p> <p>20 A. Yeah. So, I mean -- so if you look at 21 what I've written, the review was carried out 22 under the flawed assumption that cosmetic grade, 23 you know, talc was -- did not contain that. And 24 also limited to talc that did not contain. And 25 also concluded that there was no evidence of talc</p>
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<p>1 A. I mean, I do not know every study they 2 reviewed. I'm just providing -- I don't know 3 every study that IARC reviewed.</p> <p>4 Q. Well, you could find that out by 5 looking at the studies; right?</p> <p>6 A. There's not enough time. There's so 7 many studies in this and so many reports, so many 8 assessments that --</p> <p>9 Q. But you're criticizing the CIR.</p> <p>10 A. Yeah.</p> <p>11 Q. And saying it limited its assessment.</p> <p>12 A. Sure.</p> <p>13 Q. And I just want to understand the basis 14 for that statement, and what you're saying, 15 testifying here today is you don't know what the 16 CIR reviewed.</p> <p>17 MS. PARFITT: Objection. Misstates 18 testimony.</p> <p>19 A. No. That, and we can look at it. 20 Let's look at the, you know, the --</p> <p>21 Q. But you made the statement.</p> <p>22 A. Sure.</p> <p>23 Q. And I'm asking you, sitting here today, 24 can you say what they reviewed?</p> <p>25 A. Yes. I know they reviewed -- because</p>	<p>1 migration.</p> <p>2 I do not say that, you know, there was no -- 3 they did not review the -- the epidemiologic 4 studies of talcum powder products. That's not -- 5 you know, they reviewed it. But I'm just 6 pointing out the limitations of that.</p> <p>7 Q. Didn't CIR cite the very same studies 8 that were available as of 2013 that you cite in 9 your report?</p> <p>10 A. Yes.</p> <p>11 MS. PARFITT: Objection. Form.</p> <p>12 A. Again, you know, I don't know if they 13 cite evidence of biologic plausibility. I don't 14 know if they cite evidence of talc migration. I 15 don't know how they interpreted the evidence 16 of -- just because they cited a study does not 17 mean that they interpreted the data in the same 18 way that I did.</p> <p>19 So I don't know what studies specifically in 20 each section they cited.</p> <p>21 Q. Okay. One of the things that you say, 22 "as a result of these serious methodological 23 shortcomings and funding biases." Let me ask you 24 about that.</p> <p>25 A. Sure.</p>

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<p>1 Q. Is a review that's funded by an entity 2 with an interest in the outcome of that review 3 inherently flawed?</p> <p>4 A. No. It isn't. And this is just, you 5 know, one of -- and, you know, it's a potential. 6 It should be potential for funding biases. It 7 doesn't mean that just because it was funded by 8 PCPC or CIR, it is, you know, biased.</p> <p>9 But yes, I mean, so, for example, my report 10 and testimony, because it's funded by, you know, 11 should be examined for potential biases. Just 12 like, you know, CIR's report should be.</p> <p>13 Q. I want to ask you about the timing of 14 things, because sometimes you have referred to 15 reports that were done a while ago. And in this 16 case, you do that with CIR. You say, "The 17 findings of this panel have been superseded by 18 several new epidemiologic studies," and so forth. 19 The line goes on.</p> <p>20 Is it your opinion that -- well, let me ask 21 this way: At what point in time can we say that 22 the epidemiologic studies have sort of been 23 completed so you could rely on that information?</p> <p>24 MS. PARFITT: Objection. Form.</p> <p>25 A. Yeah. I mean, so you rely on</p>	<p>1 regulatory agency in late 2018. So things take 2 time. And, you know, people, scientists take 3 time to come to conclusions.</p> <p>4 Q. Okay. Let's go to Exhibit 22.</p> <p>5 A. Which is?</p> <p>6 Q. That's the Berge -- I believe that's 7 how it's pronounced -- report?</p> <p>8 MS. PARFITT: The Berge study?</p> <p>9 MR. LOCKE: Yes, yes. I'm sorry.</p> <p>10 BY MR. LOCKE:</p> <p>11 Q. So if you could turn to Page 9, can you 12 read the last sentence right before 13 acknowledgments, beginning with the word 14 "several." If you could read it out loud, 15 please.</p> <p>16 A. "Several aspects of our own results, 17 including the heterogeneity between case-control 18 studies and the lack of dose-response with 19 duration of and frequency of use, however, do not 20 support a causal interpretation of the 21 association."</p> <p>22 Q. And they're referring to the 23 association between talc and ovarian cancer?</p> <p>24 A. Yes. But other scientists, you know, 25 such as Penninkilampi, have concluded otherwise,</p>
<p>1 information from, what, 1982, Cramer one. But I 2 guess the question is -- I don't know, I'm not 3 trying to put questions in your mouth. But I 4 don't -- I can't -- because I evaluated the 5 causal question as of 2017 and didn't arrive at 6 an opinion until late 2018.</p> <p>7 I did not go year by year and, say, okay, in 8 2005, when IARC looked at this, could we have 9 concluded, possible, a problem? In 2010, when 10 Langseth looked, or 2015.</p> <p>11 So I did not segmentate it by time. And 12 you're just asking, even by epidemiologic study. 13 It doesn't work. You have to look at the whole 14 body of evidence and come to a conclusion.</p> <p>15 Q. Isn't it true that, prior to the talc 16 litigation, no scientist had published an article 17 stating that talc causes ovarian cancer?</p> <p>18 MS. PARFITT: Objection to form.</p> <p>19 A. Yeah. I mean, you know, I think a lot 20 of these articles have talked about -- and 21 scientists don't necessarily publish statements 22 about causation, you know.</p> <p>23 You have seen that Health Canada has clearly 24 stated that talc causes ovarian cancer. Yes, so, 25 in fact, not even scientists, but now we have</p>	<p>1 that there is, you know, suggestive of a causal 2 association. Health Canada has concluded 3 otherwise, that there's evidence of causal 4 association.</p> <p>5 Q. But here we are in 2018, there's a 6 study that's published saying, "Does not support 7 a causal interpretation of the association 8 between talc and ovarian cancer"; correct?</p> <p>9 A. Yes. I mean, you know --</p> <p>10 Q. Let me just ask you: So scientists 11 disagree about this issue?</p> <p>12 A. That's why we are here. If we all 13 agreed, we wouldn't be here.</p> <p>14 Q. Okay. Let me move to a different 15 topic.</p> <p>16 MR. TISI: How much time do we have?</p> <p>17 How much time do we have? That's okay. Just 18 write it on a paper.</p> <p>19 MR. LOCKE: We're getting close.</p> <p>20 Q. Okay. Can we go to Page 62 of your 21 report.</p> <p>22 Now, did we already do that? Maybe we 23 already did that. Sorry. I don't want to have 24 to do things again.</p> <p>25 A. Please don't.</p>

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<p>1 THE VIDEOGRAPHER: 6:36. 2 THE WITNESS: So we have 6 minutes, 36 3 seconds? 4 Q. You have 24 minutes. 5 A. Oh, sorry. 6 Q. Sorry. We already did that one. So 7 good there. 8 Let's go to Page 15 of your report. We were 9 talking just a moment ago about regulatory 10 entities and what they found. 11 In the middle of that paragraph or middle of 12 that page, there's a part that says, "Although 13 the FDA conducted a survey." 14 Do you see that? 15 A. Yes. 16 Q. And they found no asbestos fibers or 17 structures. 18 But then you, whatever you want to call it, 19 you can call it criticism or deficiencies or 20 disadvantages, you state, "The results were 21 limited, only four out of nine talc suppliers 22 submitted samples, and the number of products 23 tested was low." Is that correct? 24 A. Well, that is a correct restatement of 25 the facts. So it is not something that I made</p>	<p>1 don't know about the specifics, who are 2 manufacturers and -- yeah. But I know the 3 limitations of the survey. 4 And even they acknowledge that the study 5 could not prove that most or all talc-containing 6 cosmetic products currently marketed are likely 7 to be free. So even despite these -- whoever 8 supplied them and whoever, you know, tested them. 9 MR. LOCKE: We're almost there. Then 10 I'll turn it back over. 11 BY MR. LOCKE: 12 Q. Just one second. If you could go to 13 Page 59, please. Okay. 14 On Page 59, you've got a Roman numeral X 15 followed by a Roman Numeral III. Do you see 16 that? Talcum powder-induced inflammation. Am I 17 at the right place? 18 MS. PARFITT: I'm sorry, Tom. 19 MR. TISI: 59 of the report? 20 MR. LOCKE: Yeah. 21 A. It's probably 58. 22 Q. 58 of the report. Sorry. 23 MS. PARFITT: No worries. 24 Q. Okay. So you see that, Roman numeral 25 X, Roman Numeral III?</p>
<p>1 up. I mean, it is true that four out of nine 2 suppliers -- 3 Q. J&J was one of the entities that 4 supplied talc to the FDA; correct? 5 A. I didn't -- you know -- I didn't -- 6 that FDA document, you know, I'm not aware of who 7 supplied. 8 Q. You didn't look at it. You criticized, 9 but you didn't look at the fact that J&J 10 submitted talc samples and product to the FDA? 11 MS. PARFITT: Objection. Misstates his 12 testimony. 13 A. I reviewed the reference and I reviewed 14 the -- you know, so I'm not testifying I reviewed 15 talcum powder products and ovarian cancer. You 16 know, and I was looking at the evidence. But I 17 didn't look at whether J&J submitted samples or 18 Imerys submitted samples, no. 19 Q. And you don't know whether, then, the 20 FDA, in fact, tested the two J&J products at 21 issue in this litigation and found no asbestos 22 fibers or structures in the samples? 23 MS. PARFITT: Objection. Misstates the 24 survey. 25 A. I don't know -- I don't -- you know, I</p>	<p>1 A. Have we gone through this? I'll be 2 happy to go through it again. 3 Q. I want to ask you about something. 4 A. Sure. 5 Q. You have a statement, the first 6 sentence says, "Inflammation has long been 7 understood to be an important mechanism 8 underlying the development of ovarian cancer." 9 Do you see that? 10 A. Yes. 11 Q. And then you referenced 61. And if you 12 go to Exhibit 4, that is your list of references; 13 correct? 14 Well, for me, I was looking at it, because 15 it was broken out separately. But you could see 16 it at the back of Exhibit 10 as well. 17 A. Yeah. 18 Q. Do you see that, 61? 19 A. Yeah. 20 Q. And if you -- can you read the title of 21 the reference that you're citing to there? 22 A. The Ness study, is that? 23 Q. Right. The Ness study. 24 A. Possible Risk of Ovarian in -- Cancer. 25 Q. It's "Possible Role of Ovarian</p>

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1	Epithelial Inflammation in Ovarian Cancer."	1	-----
2	Now, you're citing that for "long been	2	E R R A T A
3	understood to be an important mechanism," but, in	3	-----
4	fact, the first word in the title is "possible."	4	PAGE LINE CHANGE
5	A. Yeah. And you can clarify that. I	5	REASON: _____
6	mean, this is about plausible mechanisms.	6	_____
7	Q. But it certainly doesn't say it's long	7	REASON: _____
8	been understood to be an important mechanism.	8	_____
9	A. Well, I disagree. I mean, you know,	9	REASON: _____
10	maybe that -- you can't cite all the articles for	10	_____
11	each statement you make. I wish I did.	11	REASON: _____
12	But inflammation, as I understand it, is an	12	_____
13	important mechanism. And at least has been known	13	REASON: _____
14	for a long time about ovarian cancer. And others	14	_____
15	can opine in more detail. Is that citation the	15	REASON: _____
16	most? Yeah, that particular citation has a	16	_____
17	possible, you know, clarifier on that.	17	REASON: _____
18	MR. LOCKE: Okay. Let me just see if	18	_____
19	I've got anything else here. That's all I have.	19	REASON: _____
20	THE WITNESS: Thank you.	20	_____
21	MR. LOCKE: Thank you. Anyone else?	21	REASON: _____
22	MS. PARFITT: Let's take a quick break	22	_____
23	and see if we have any follow-up.	23	REASON: _____
24	THE VIDEOGRAPHER: Off the record,	24	_____
25	5:13 p.m.	25	REASON: _____
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1	(A recess was taken.)	1	ACKNOWLEDGMENT OF DEONENT
2	THE VIDEOGRAPHER: Back on the record,	2	I, _____, do
3	5:26 p.m.	3	hereby certify that I have read the
4	MS. PARFITT: Thank you. Dr. Singh,	4	foregoing pages, and that the same
5	the plaintiffs have no questions. I want to	5	is a correct transcription of the answers
6	thank you for your time today.	6	given by me to the questions therein
7	We would ask that Dr. Singh read and	7	propounded, except for the corrections or
8	sign.	8	changes in form or substance, if any,
9	MR. ZELLERS: Thank you, Doctor.	9	noted in the attached Errata Sheet.
10	THE WITNESS: Thank you.	10	
11	MR. KLATT: Wait. I've got 30 seconds.	11	
12	THE WITNESS: I want to thank everybody	12	
13	for a very professional, you know -- I've done	13	
14	this a couple of times. And if I have raised my	14	
15	voice, it hasn't been anything personal. It's	15	Subscribed and sworn
16	just been trying to explain something.	16	to before me this
17	MR. ZELLERS: Thank you, Doctor.	17	_____ day of _____, 20____.
18	THE VIDEOGRAPHER: And we're off the	18	My commission expires: _____
19	record at 5:27 p.m.	19	
20	(Deposition concluded at 5:27 p.m.)	20	
21		21	
22		22	
23		23	
24		24	
25		25	

Sonal Singh, M.D., M.P.H.

1 C E R T I F I C A T E
2 COMMONWEALTH OF MASSACHUSETTS
3 SUFFOLK, SS.
4 I, Janet M. Sambataro, a Registered Merit
5 Reporter and a Notary Public within and for the
6 Commonwealth of Massachusetts do hereby certify:
7 THAT SONAL SINGH, M.D., M.P.H., the witness
8 whose testimony is hereinbefore set forth, was duly
9 sworn by me and that such testimony is a true and
10 accurate record of my stenotype notes taken in the
11 foregoing matter, to the best of my knowledge, skill
12 and ability; that before completion of the deposition
13 review of the transcript was requested.

14 I further certify that I am not related to any
15 parties to this action by blood or marriage; and that
16 I am in no way interested in the outcome of this
17 matter.

18 IN WITNESS WHEREOF, I have hereunto set my hand
19 this 17th day of January, 2019.

20

21

22 JANET M. SAMBATARO
Notary Public

23 My Commission Expires:
July 16, 2021

24

25